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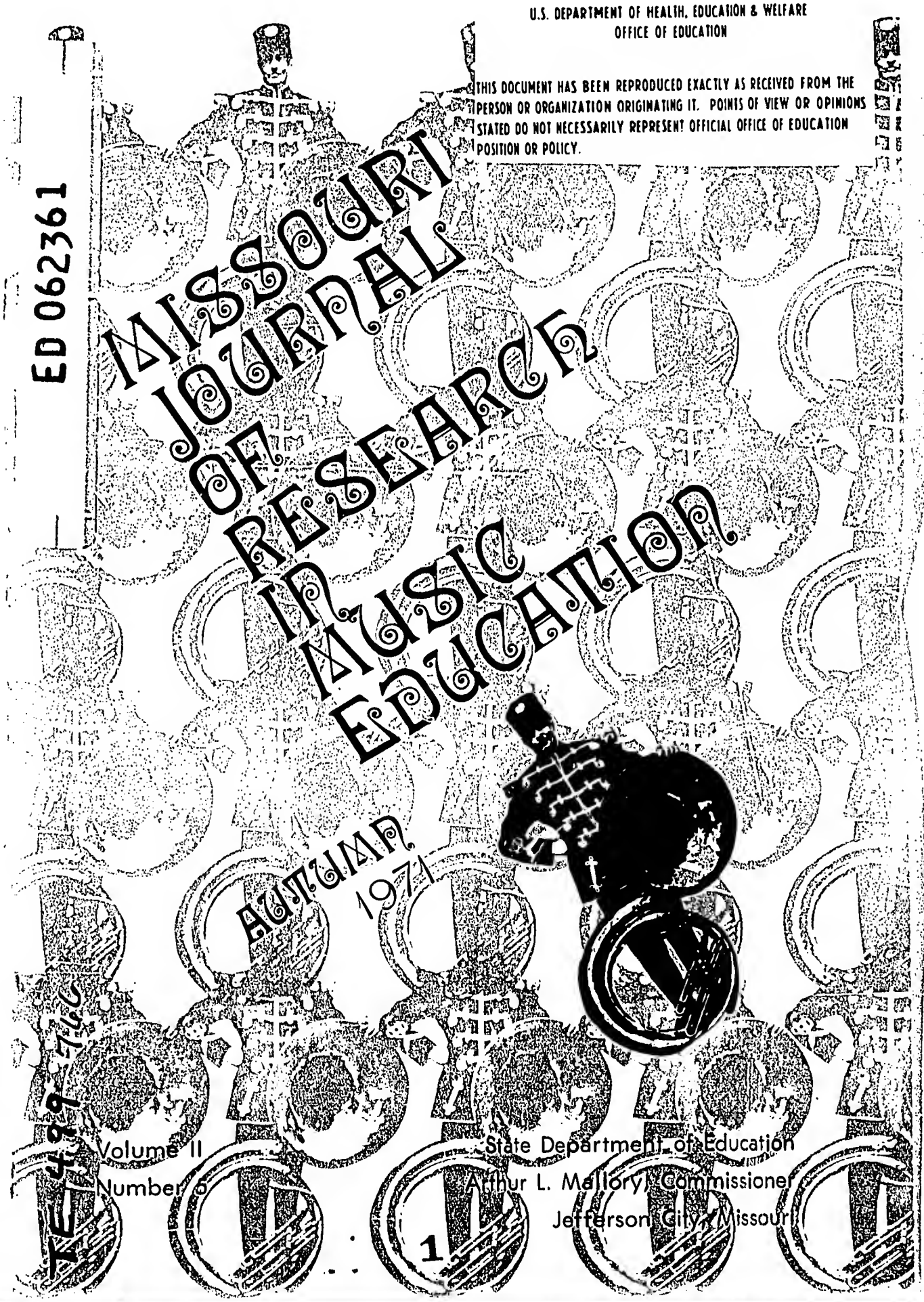
ABSTRACT

The six articles presented in this journal are: I. Research in Action: The Transfer of Research in Music and Music Education into the Classroom by Jack R. Stephenson; II. Programmed Instruction and Music Education by Douglas L. Turpin; III. Music Education and the Blind by Joan Thief Gagnepain; IV. Improved Teaching Through the Use of the Videotaperecorder by Paul D. Rodabaugh; V. Development of a Methodology for Transcribing the Organ Music of Bach for Band by James M. Burk; and VI. Humanities, Integrated Arts, and Aesthetic Education by William D. Gaver. Dissertation Abstracts listed in chapter VII are as follows: A Basic Method of Group Instruction for Beginning Church Organists by Sister Dorothy Venhouse; An Investigation of the Vibrating Clarinet Reed Utilizing High Speed Cinematography by Roger Dean Coppenbarger; A Study of Interviewing Practices and Techniques Utilized in the Screening of Prospective Music Personnel in Departments of Music in Institutions of Higher Education by Joseph M. Hegstad; A Study of Rehearsal Techniques for Symphonic Band by William N. Vereen, Jr.; A Study of the Application of Creativity in the Teaching of Secondary School Music by Elwood H. Brown; Music Departments of Colleges or Universities and Public Schools--Interrelationships by Jesse Laurence Peterson; and Serial Compositions for Band by Robert Lowell Casey. (LS)



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ALFRED W. BLECKSCHMIDT, Director
Fine Arts Education
State Department of Education

LEWIS B. HILTON, Editor
Washington University, St. Louis

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Contributions to this journal should be sent to Alfred W. Bleckschmidt, Director, Fine Arts Education, State Department of Education or Lewis B. Hilton, Editor, Washington University, St. Louis. Authors should observe the following rules in preparing their manuscripts: the editors welcome contributions of a philosophical, historical or scientific nature which report the results of research pertinent in any way to instruction in music as carried on in the educational institutions of Missouri. Articles should be typewritten, with double spacing throughout, including footnotes, long quotations, and itemized lists. Footnotes should be placed consecutively at the end of the article, beginning on a new page, using triple spacing between notes. Authors reporting quantitative studies may substitute a list of references for footnotes in accordance with practice followed in many scientific journals. In all instances, manuscript style should follow recommendations made in the MLA Style Sheet. The Chicago Manual of Style should be followed in setting up tables, charts and figures, which should be numbered and placed on separate pages.

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PREFACE

The *Missouri Journal of Research in Music Education*, published as a Bulletin of the State Department of Education, is devoted to the needs and interests of the school and college music teachers of Missouri and the nation. This issue, Volume II, Number 5, is the tenth to appear in as many years.

The members of the Editorial Committee are grateful to those readers who have written suggestions concerning the content of past issues and request that criticisms and suggestions, always welcome and never unheeded, again be sent to the Editor concerning the content of this issue. We strive for a reasonable balance among music theory, history, philosophy or aesthetics, and pedagogy. It is difficult to judge how successful we are without reader response.

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—THE EDITOR

RESEARCH IN ACTION: THE TRANSFER OF RESEARCH IN MUSIC AND MUSIC EDUCATION INTO THE CLASSROOM

Jack R. Stephenson

University of Missouri — Kansas City

The following address was given by Professor Stephenson at the Missouri Music Educators Association conference in Jefferson City, Missouri, January, 1971.

In the Twentieth Century, research and the resulting accumulation of knowledge has seemed to grow by an algebraic rate. We are drowned by facts and figures, by new ideas and new methods. Yet this growth is not even. The physical sciences have moved faster than behavioral and social sciences creating an affluent world appearing at times more destructive than constructive. And in turn we have our problems in music education. Here our growth in research and application of research has been slow, spotty, and mediocre by comparison to even the behavioral sciences. There are reasons for this. Music is such an exciting and rewarding experience, no musician has the time or the interest necessary for the nitty-gritty of research. And then, too, the level of perfection reached in music for the past several hundred years obviously has been in advance of most other fields of human endeavor which in turn has caused us to either rest on our laurels or place music on an untouchable, sacred pedestal. In addition, we music educators are a hardheaded, independent bunch; perhaps a trait instilled in our makeups by the rigorous discipline required to master music. Or maybe it is the old Missouri "show me" philosophy which demands concrete proof of a better way before we change what we are doing.

In any case we are faced with increasing amounts of knowledge. This increase in knowledge has changed our approach to problem solving and training for problem solving. Thirty years ago the statistics class was a laborious process of learning formulas and solving problems primarily with pencil and paper. Now it is a problem of semantics. When we teach statistics we aim to help the student gain the power to read his journals. These large amounts of knowledge have led to the development of more knowledge. The computer began as a simple device designed to store knowledge. For example, one could store 50,000 records of metal alloy combinations and retrieve the results of these combinations in seconds. Now these computers have been developed into complex problem-solving devices, an interesting example of which was the role played by the com-

puters in the successful return of the astronauts after the explosion in the Apollo Moonshot.

The sheer proliferation of knowledge is overwhelming. The advance in biochemistry alone has taxed the medical profession, pharmacy, and particularly the Federal Government Controlling Agencies. A college professor in the sciences certainly is outdated in ten years unless he finds some way to keep up. A striking and simple example of proliferation in music is the fact that if we spent eight hours a day for the rest of our lives, we could not listen to all the music that has been recorded to date—not to mention what will be recorded. It is projected that 2000 A.D. there will be more than one million periodicals published in the United States alone.

To further complicate the situation, we are in a period of change. Not only change but a rapid rate of change creating monstrous mechanical problems: there is a shortage of personnel to repair the hardware of our technology; or one can fly from San Francisco to New York in two hours and then not be able to land; or if one can land, it takes longer to get from the airport to our final destination than the flight time consumed. But more serious than the mechanical problems are the problems created by technology changing so rapidly. The ecology cannot keep up with the technology thereby destroying the environment, the world and the way of life we are supposed to be improving. But more serious than the ecology problem is the social, human problem created by such great and rapid changes. Not only poverty and starvation, wars and death, but increasing anxieties and search for a life purpose, a *Weltanschauung* in this increasing seemingly insurmountable chaos. It is predicted that the average working man will have to completely change his occupation at least three times between the ages of 20 and 60. Not only does this entail a complicated system of retraining and financial support, but it taxes a man in terms of his own self-image, his justification for living. Recent sociological research indicates that too many changes in a space of time can cause serious psychosomatic and physiological illnesses.

Yet as problematic as *change* may be, we must face the fact that change is a part of the world today. From an article in the July 1970 *Psychology Today*, "Cultures in Collision," by Philip E. Slater we have this statement:

> . . . The old culture, when forced to chose, tends to give preference to property rights, technological requirements over human needs, competition over cooperation, violence

over sexuality, concentration over distribution, the producer over the consumer, means over ends, secrecy over openness, social reforms over personal expression, striving over gratification, Oedipal love over communal love. The new counterculture tends to reverse all of these priorities . . . I do not believe our society can long continue on its old premises without destroying itself and everything else. Nor do I believe it can contain or resist the gathering forces of change without committing suicide in the process . . . This of course makes the assumption that some kind of drastic change is either desirable or inevitable.[1]

The very definition of democracy with its "of, by and for the people" rests on change to meet the needs of the people. And change depends on communication of needs. And identification of needs depends on search and research. Therefore we can say democracy cannot exist without the process of research which leads us to the role of education in this country. We are committed to the basic premise of making education available to all children, because we believe knowledge is essential in sustaining a democracy. This demand on education immediately commits us to research — research to identify needs, knowledge, methods, and hardware.

Our question now is do we have adequate research in music education, and do we have adequate channels to make these results available to and usable by the classroom teacher?

First, do we have adequate research in music education? Henry Cady from Ohio State University had this to say to the Missouri Music Educators in the spring of 1970:

> . . . For the most part, they [the music teachers] accept teaching their art because a livelihood using their art in any other way is not possible at the present time except for a few people. Negatively speaking, one could say that generally music teachers are diverted performers, composers, theorists, and historians . . . [In a request for research titles from 1930-1962 out of 449 titles, 80% were either compositions or essays] . . . Because music educators come to the threshold of research by way of musical art, a very great change is required in those who become sophisticated in the methodology of the behavioral scientist . . . It is in this mode of inquiry that the music educator has produced a prodigious amount of inadequately performed research. The problems have been behavioral, but the methods have

been library searching and sharing of quasi-educated guesses. [Some have called these guesses pooled ignorance.] It follows that the quantity of knowledge at advanced levels is so great that we had better revise our concepts of content, intensity, and duration of both undergraduate and graduate education . . . It could be that the methods of learning rather than the information of learning will become the general examination content for the doctoral aspirant.[2]

Allen Britton in the Spring issue 1969 of the *Journal of Research in Music Education* has a somewhat different view. To quote:

. . . Of the 107 articles published in JRME from 1963 through 1972 . . . about half the articles were scientific in nature, while the remainder were historical or philosophical. However, beginning in 1963 a change can be noted. The large preponderance of our articles now report scientific rather than historical investigations.

. . . The most important problems of teaching music in the schools are musical problems, and these require the most sensitive musicianship and wide ranging experience with music itself for education. Thus, it would seem that the primary preparation of professors of music education should be musical rather than psychological, sociological, or anything else . . . It seems to me that we should grant at the outset that only a comparatively few members of the music education profession will by the nature of their interests and training possess the kind of enthusiastic interest in scientific research which can guarantee competent results. It will be this comparatively small group of researchers who will set up laboratories for continued research in the future, and who are most likely to have the breadth of wisdom requisite to the proper interpretation of research findings.[3]

Undoubtedly both men are correct. We must have well-defined research, and we cannot all be research scientists. We are teachers of music and so we must be teachers and we must be musicians. As the medical doctor must have research in new medicines and new techniques, and as the builder must have new materials and new techniques, so the music educator facing the learner daily must have new materials and new techniques to do his job. First, the teacher *must know his music,* be able to perform, be aware of what has been happening in music particularly since 1900, and be aware

of what is happening today; he must know his materials and where to find new materials; he must know all the instruments, old and new, including electronic ones. Secondly, he *must know how to teach,* to know children of all ages, to understand the why and how of aesthetics and of learning; he must be a competent conductor. Finally, he must know *how to plan and administer,* to plan budgets, to integrate programs, to work with school and community. Every day in the life of a teacher there is a bit of research — a bit of trying something new. But unquestionably vigorous and formal research must be relegated to the person with the time, the facilities, the interest, and the know-how.

Secondly, do we have adequate channels to make research available and usuable? Again to quote Henry Cady:

> . . . We have yet to begin preparing programs for people of the kind who can convert the products of our research and encourage colleagues to use them.[4]

In terms of a well-designed and implemented program, this is true. However, there are programs working for communication of musical research right now, granted they are isolated and not very well integrated. We in music education have several very direct avenues for obtaining knowledge of innovations and research. *One, the universities*: through research, through workshops, through visiting clinicians and leaders in the profession, through research publications by the faculty, through university libraries. *Two,* we have our *professional organizations* at the national, state, local, and private level providing publications, conventions, workshops, underwriting and initiating research, providing bibliographies and lists of materials. *Three, the music industry,* publishers and manufacturers probably have done the best job of communication through workshops, brochures, specialists, clinicians, lists of materials, and records. Also, through the American Music Conference, knowledge of progress in music education is brought to the general public. *Four, the public schools* including our state departments of education, provide in-service training, require additonal training for pay increments, provide librarians and educational media staff, faculty libraries. This represents only a partial listing of what these agencies can do to bring research to the music teacher.

Then we have less formal avenues of information: the newspapers, magazines. Did you see the Time Magazine recently? It reports that they have synthesized a chemical which can make rats afraid of the dark. Or perhaps more pertinent to our young clien-

tele, our students, is the cover page featuring Ali McGraw as the star of *Love Story*. The argument in this cover story is that this move represents the return to romanticism in the United States; to personal relationships rather than politics, to feeling rather than action. If this is so, it could have a direct bearing on the music experiences we choose for our students in the next few years.

In addition to the newspapers and magazines, we have radio and television. As I sat writing this speech, out of one corner of my eye and ear I was aware of Richard Chamberlain explaining to David Steinberg on the Johnny Carson show about his role as the lead in the new movie on the life of Tschaikowsky. We have never in the history of man had the opportunity to know so much. We can go and do and see. The world is becoming increasingly accessible to all. It is the real-life laboratory for student and teacher alike. It is an experience to see music therapy in action in London hospitals; a woodwind quintet in Amsterdam played on instruments made in the 18th century; avant-garde opera in Cologne, Mozart's "Magic Flute" in Vienna, children in Salzburg singing "Einen Kleinen Katzen" under the direction of teachers from the Orff Institute, a music education class in Bern, Switzerland, or flamenco in Malaga, Spain or the fados in Lisbon, Portugal, and then those wonderful pipe bands of Scotland. We can bring the greats of today to our very own doorstep. For example, the list of people who were clinicians at the four-day "Robert F. Kennedy Symposium" on the University of Missouri-Kansas City Campus was impressive: Alvin Toffler, William Daly, Ramsey Clark, Dr. Allan Westin, Hans Morgenthau, Victor Ferkiss, Nat Hentoff, B. F. Skinner, Buckminster Fuller, and Robert Vaughn. There is so much to do, so much to see, so much to read, so much to listen to, so many places to go; and in this lies our problem. *First*, we must have more time for these kinds of activities. *Secondly*, there must be systems for predigesting and editing. *Third*, we must learn how to rely on technology to store knowledge for us. *Fourth*, we are going to have to put first things first, to be able to leave out the nonessentials. *And* last we must give up the old American belief that we can do it all by ourselves. We have to learn to rely on and to use the multiplicity of avenues for knowledge available to us.

Now to return to the role of the universities, the professional organizations, the music industry, and our public schools. *Universities* must become resource centers available for our use at no cost seven days a week and 18 hours a day. In a music materials learning center we should expect to find every list of music available

with sample scores and recordings. The universities do provide considerable knowledge about music. But we should be able to find all research on acoustics, buildings, budgets, curricula, you name it, and it should be available to us in seconds — just like the computer for the various alloys of metal. There has been a plan for several years to make every major university library a division of the Library of Congress, so that one could sit in a booth, dial Washington and read and inspect anything in the Library of Congress. We do not have this facility, because we are spending our money to fight wars instead. Then the universities need to be offering workshops year round and also other experiences jointly planned by the teachers and the university — planned to deal directly with the teachers' immediate problems. Related to this idea both Bruno Bettelheim, the Neo-Freudian child psychologist, and John Holt, author of the two books, *How Children Learn* and *How Children Fail*, speaking on different occasions in Kansas City this fall made similar observations concerning the role of higher education for the future. They felt the sooner one gets on the job the better. This is where we learn. And we will not be coming back to college to fulfill residence requirements and obtain doctorates. Instead we will use the university much as we use a public library, spending on the average two hours a day there for the rest of our lives, absorbing knowledge as it is needed and as it relates to our teaching problems. This activity will be a part of our job, and time must be provided for it.

And our professional organizations. This convention is the product of one of our professional organizations. They sponsor festivals, provide us with lists of materials, adjudication forms, instructions on how to prepare our music, and instruction on how to adjudicate. They initiate research. Several years ago the Music Educators National Conference persuaded the National Education Association to do a curriculum survey of Art and Music in the United States—one of the first curriculum studies ever done by NEA. MENC has provided the leadership for the past ten years for the Ford Foundation Contemporary Music Projects in an effort to improve the skills and knowledges of the music teacher. Then we had the Tanglewood Symposium; and the National Office of Education underwriting the Julliard Project (the results of which now are published by the Canyon Press.) This is an excellent example of a three-way cooperative endeavor: the United States Government, a school of music, and a publisher. We as individuals must take an active part in supporting our professional organizations. "Grass roots" philosophy has been the aim of MENC for some time, but it is difficult. We

must work with these organizations which provide us with realistic and useful information.

The *music industry* must work more closely with the profession. Their efforts have been great, but at times at odds with the aims of good music education, often moving toward the fast dollar without seeing the long-range dangers. Again it is up to us to help guide the industry in serving us most efficiently. In so doing, of course, we insure their economic future, and at the same time insure the accessibility of materials and equipment.

In *our own schools* we need more time from day to day to make contact with these sources of information — not just during the summer months. Recognition and work load credit should be given for research and work in professional organizations. Paid sabbaticals are an absolute must, and some schools do have them now. We must go about setting our professional house in order. We will have to plan for the future to provide for our continuous growth as a profession. Other professions have done it — we must do likewise.

We are in one of the most exciting, one of the most challenging, one of the most varied professions in the world. It is a profession where one can never know enough. We should be demanding more research, more knowledge, and better access to knowledge. It will not work to have universities forcing us into the library, or school increments forcing us to get out and look for what we need. It is going to have to be our move, our demand for more answers to eliminate those problems and frustrations that keep our work from being as rewarding as it can be. It is the old adage: knowledge cannot be poured in. We will have to reach out and get our share — so start reaching.

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PROGRAMMED INSTRUCTION AND MUSIC EDUCATION

Douglas L. Turpin
Washington University, St. Louis

Introduction

In the 1967 Autumn issue of the *Missouri Journal of Research in Music Education* an article[1] entitled "Programmed Instruction and Music Education" is published. Robert J. Hutcheson, Jr. is the author of this paper which gives an account of programmed instruction prior to 1967. It is the purpose of this article to write a resume of Hutcheson's paper and to report further developments in this field from 1967 to early 1970. An additional intent is to supply a bibliography which relates to the field of programming with regard to music education.

Hutcheson quotes Leon Dallin[2] who in a survey (1966) found that 107 of the 444 college level music departments which responded were currently using programmed materials in music. In addition, 163 reported they planned to adopt such a mode of instruction.

In an effort to show the significance of programmed instruction in music education, Hutcheson quotes William McBride and Thorndike. McBride[3] believes that the concept of programmed instruction is not new, but merely a precise organization of some of the best approaches to learning that successful teachers have used for many years. Thorndike[4] sees programming as a means of freeing the teacher from those tasks that could best be handled by a machine. A human being should not be wasted in doing what forty sheets of paper or two phonograph records could do just as well. Precisely because personal teaching is precious and can do what books and apparatus cannot, it should be saved for its peculiar work.

A brief historical introduction to programmed instruction is given by Hutcheson tracing non-programmed devices such as H. Chard's[5] device for teaching reading in 1809, and Halcyon Skinner's device for teaching spelling in 1866. Maria Montessori was found to have patented a device in 1914 to teach the proper trigger squeeze to U.S. Army recruits (1918). Sidney L. Pressey of Ohio State University is generally credited with developing practical machines that could teach as well as test. Pressey's versions were multiple-choice program devices. They immediately informed the student of the correctness or incorrectness of an answer.

Hutcheson[6] lists the following characteristics of successfully pro-

grammed instructional materials which he states are the subdivisions of concepts and the contributions of many writers:

1. The material to be learned should be presented in a logical series of steps.
2. Material to be learned should be organized and presented in the form of numerous, small, logical and graduated steps (or frames) leading from the known to the unknown.
3. A response (written or unwritten) should be elicted from the student to each (or at least most) of the frames.
4. The student should be immediately informed (feedback) of the accuracy or inaccuracy of his response to each question.
5. A hoped-for corollary of the response the student makes is that active student involvement is insured in a manner not possible in a lecture approach or any unindividualized approach.
6. The self-instructional nature of programmed materials should permit the student to determine or follow his own learning pace.
7. Machine operation should be almost completely self-contained so that a minimum of the student's attention involves pure manipulation of the operational process of the machine.
8. Feedback data allows designing improvements and making revisions from experience.
9. Individual differences should be provided for.
10. Several phases of the instructional procedure may be integrated.
11. A good program assumes an adequate philosophy of education and an understanding of the learning process.

Hutcheson states that Norman Crowder[7] has estimated that 100 to 150 hours are usually required to program adequately the material covered in an hour lecture and he quotes Philip Lewis'[8] orderly outline for program preparation:

Establish definite educational objectives for the unit or course. Identify the body of content, the skills to be developed or the processes to be involved in achieving the objectives.

Divide the content area into learning increments (small bits of information or instruction, each of which can be easily mastered by the learner). The increments are also called frames.

Arrange the increments in a learning sequence (simple to complex, concrete to abstract).

Insert cues and prompts in the sequence where these are deemed necessary to assist the learner.

Insert review increments as the program progresses to keep the learner refreshed on materials learned earlier.

Provide a challenge for the learner to accompany every increment. This may be a question to answer, a problem to solve, or an operation to be performed.

Arrange for the learner to have immediate knowledge of results of his response to the question or problem before he ends the next increment.

Hutcheson[9] states that "though there are several types of programming techniques, two have dominated the scene and have received most of the attention." He cites the Skinnerian (or "linear") program in which all the subjects follow the frames step by step, skipping none, and follow the same order or sequence of frames. The other format, Norman Crowder's, is termed a "branching" or the "intrinsic" approach. This design employs larger learning increments and multiple-choice answers. The alternate answers (besides the correct answer) are planned to take into account logical misinterpretations of the questions. They are not supposed to "trap" the learner, but rather to point out the area or areas wherein review or clarification is needed.

Before leaving the Hutcheson article, a list of terms pertinent to this study will be included below which he cited from an article by Charles Foltz[10] and other sources:

Glossary of Terms

AUGMENTING — A method of teaching a concept, working rule, or principle by building up to it through small sequential bits of information. As the student learns the small easily assimilated steps, he will be led to formulating this concept or principle for himself without actually seeing it written out or explained (Foltz).

AVERSIVE REINFORCEMENT — A way of negatively reinforcing a given action by an injurious or distasteful means such as spanking or subjecting a child to public ridicule for being wrong. In programming it is used to describe the technique of encouraging errors and then reinforcing the right answer by telling the student how wrong he is. (Foltz).

BRANCHING — A type of programming which has built-in alternate sequences of items for the extra-bright or slow student. If a student makes a single or a number of wrong responses, he is led through an alternate sequence of steps to give him remedial

practice and new explanations of a concept he cannot immediately grasp. ("Wash back" = backwards branching). If the student demonstrates by a series of correct responses that he has quickly grasped the material, he may be skipped forward over additional material on the same subject. ("Wash ahead" = forward branching). In a sense, any departure from a sequence of items proceeding methodically towards a given learning goal. Intrinsic programming employs the branching technique. (Foltz).

CARTESIAN METHOD — A basic technique of programming devised by Descartes. It consists of breaking down a subject to be taught into its smallest component parts and then arranging these into a hierarchial order. to aid the learning process. (Foltz).

CUE — Used interchangeably with prompt to mean any bit of information added to a program item to make it easier for the student to make the correct response. One of the objects of much current research is to determine how much material should be given to a student to enable him to get the right answer. This is called the problem of cue clarity. (Foltz).

ECHOIC REINFORCEMENT — Reinforcing a student response by showing him the right answer. Merely telling him he is right or wrong is called non-echoic reinforcement. Current research indicates that echoic reinforcement is the better method of reinforcing correct answers, and leads to longer retention. (Foltz).

EXTINGUISHING — The process of forcing a student to unlearn a learned response or mode of behavior by failing to reinforce it each time it is emitted, or reinforcing it aversively or negatively. (Foltz).

FADING — The technique of lessening the number of cues or prompts as the program progresses, thus weaning the student slowly away from reliance on the program and forcing him to think more for himself. (Foltz).

FEEDBACK — A technique essential for programmed learning which gives the student (and eventually the teacher) immediate knowledge of the correctness of his answers to items in the program. This acts as a type of reinforcement to correct answers. (Foltz).

FRAME — A single step of a program usually containing information and a question to be answered in one form or another. So called because it is exactly the amount of material that will fill the space of a display panel of a self-instructional device. Used interchangeably with item. (Foltz).

HEURISTIC — Serving to guide, discover, or reveal; specifically,

valuable for stimulating or conducting empirical research but unproved or incapable of proof — often used of arguments, methods, or constructs that assume or postulate what remains to be proven or that lead a person to find out for himself. (Webster New Int. Dict., 3rd Edition, 1961).

LAW OF RECENCY — A basic concept of reinforcement theory, stating that the last response reinforced is the one that is learned. A corollary is that the more rapidly a response is reinforced, the better it is learned. (Foltz).

LINEAR PROGRAMS—Also called straight-line, non-branching, or Skinnerian programs. These are programs where the sequence of items is fixed, unalterable and identical for each sequence. Crowder would call these extrinsic programs, because the rate and sequence of presentation are not built in but determined by an outside agency, the program writer or instructor. (Foltz).

MATHETIC — Of or relating to science or learning. (Webster New Int. Dict., 3rd Edition, 1961).

PINBALL MACHINE EFFECT — A phrase coined by Skinner to describe the novelty effect of learning with a self-instructional device. The use of a device or machine of any sort seems to be more interesting to the student than merely reading a text. (Foltz).

PROGRAM — The textbook of the self-instructional device. It consists of course material broken down into small, easily digestible bits and arranged in sequence to lead the students to a fundamental understanding of concepts basic to the course. (Foltz).

SELF-INSTRUCTIONAL DEVICES — Also called learning machines, teaching machines, or auto-instructional devices. This includes any device which can present systematically programmed materials while making efficient use of reinforcement. That is, it has the facilities for displaying the programmed material, offers some method for making a response and showing whether the response is correct or not. (Foltz).

SOCRATIC METHOD — The method of inquiry and instruction employed by Socrates, especially as represented in the dialogues of Plato. It consists of a series of questionings; the object of which is to elicit a clear and consistent expression of something supposed to be implicitly known by all rational beings. (Webster New Int. Dict., 2nd Edition, 1954).

STEP — This is the space between one item and another in terms of the mental operations necessary to go on to the next item. Difference in step-size is practically impossible to measure, although a subject of much theoretical dispute. The question is how much

mental effort can be demanded of a student in going between one item and the next. (Foltz).

VANISHING — Both a programming technique and a factor of device design. In programming it refers to the gradual withdrawal of prompts from the program item so that the student is weaned away from reliance on the program for clues to the correct responses. In devices it is the mechanical capability of dropping out questions which have been answered correctly before. (Foltz).

Programmed Instruction in Music 1967-1970

— Articles —

Virginia Gore[11] believes that, "The rationale of programmed instruction rests on the same sound principles which have guided our finest teachers, principles which have stood the test of time in real teaching situations and which have been critically evaluated in numerous experimental situations."

Gore[12] gives the following characteristic features which distinguish programmed instructions from conventional teaching devices:

1. Students who need to learn very slowly may do so, while other students may move ahead rapidly.
2. Constant participation is required of the student — he makes a response to each unit ("frame") of instruction. Usually the responses are recorded.
3. The student is able to ascertain the correct answer immediately after making the response.
4. The material proceeds in small steps, each step presuming no other knowledge of the subject than that presented in preceding steps.
5. Different types of programs are available to conform to different needs. Some programs are self-contained; others make use of films, books, recordings, etc. Some programs complement classroom activities; others can be studied without a teacher.
6. Before commercial release, each program has been tried out on students, their errors analyzed and used as a basis for revision of the program.

Gore[13] concludes her article with a compilation of various "Programs in Music" which have been published and are available to the reader. A synopsis of those programs relevant to this paper (i.e., produced after 1966) will be cited in the appendix (see appendix).

Bernard Fischer,[14] in his article "Programmed Learning," gives a brief look at "How We Learn" before attempting to produce a program. He concludes that from the student's standpoint, learning can be considered as a change in behavior. Programmed learning, then, attempts to produce this change in behavior largely by emphasizing a principle called reinforcements; i.e.. repeated responses or reactions to reiterated stimuli.

Fischer[15] gives the following steps for the construction of a program:

1. Develop teaching objectives in terms of behavior. Psychologists generally recognize behavior in two domains, cognitive and affective. Behavior in the cognitive domain is measurable; the affective domain cannot easily be measured.
2. Evolve a task analysis (an itemized statement of behavioral activities expected from the student) in order to fulfill the teaching objectives (e.g., a task in applied music which could be as follows: generating a special tonal effect, producing a new kind of rhythm, etc.).
3. An outline should be made consisting of all the tasks broken down into segments, each containing a single idea or action.
4. From the outline, devise instructional units called frames.
5. The frames could progress gradually in a planned, orderly manner (linear) or students could be directed to special frames (branching).

Fischer concludes his article with a method for testing and determining the validity of a program constructed according to these guidelines.

Further potential for programming and music education can be seen in an article by Ned C. Deihl and Rudolf E. Radocy[16] entitled "Computer-Assisted Instruction: Potential for Instrumental Music Education." It is their opinion that now is the natural time to turn to the machines for processing and retrieving information. It is pointed out that the computer can present material to the student, ask questions, and process responses. Linear programming is considered weak because (1) the steps are small enough so that even the slowest student can progress without difficulty; and (2) the brighter student must follow the same route. The authors are, in fact, recommending the alternate approach (branching) as opposed to the linear:

> The brighter student must follow the same route as his less competent peers. By aiming the program at a higher level,

providing remedial material for those who cannot keep the pace or permitting the bypassing of material according to certain criteria, programs can offer much flexibility.[17]

Deihl and Radocy[18] see instrumental music generally being taught much as it was forty years ago. They suggest that the area of ear training in music theory classes should lend itself to computer-assisted instruction (CAI); self-presentation drill could supplement the traditional classroom "dictation" drills. The authors describe the purpose of their project (1967 to 1969) as developing and evaluating computer-assisted instruction in aural and visual discrimination directly related to instrumental performance. Specifically, this listening program was currently limited to articulation, phrasing, and rhythm for the clarinet at the intermediate level.

Ashford[19] gives an interesting account or follow-up study of an experiment conducted during an eleven-week study of the use of programmed instruction to teach certain aspects of music (Northwestern University, 1964). The general question asked was: Are there any observable long-range effects of programmed instruction in the fundamentals of music theory on the behavior of subjects? The results indicated that there were no apparent differences from teacher-classroom methods with respect to retention of material. It was noted, however, that the programmed-instruction subjects continued to perform significantly better on a three-year delayed recall examination than did the control subjects.

Leon Dallin[20] gives a succinct description of programming, a historical analysis, and sees a list of possibilities for future use. He found that most programmed instruction for music education during the 1950's was either in book form or was only usable with tape recorders.

> Only one music program marketed in the United States is designed for use in a special teaching machine. This is the TMI-Grolier "Fundamentals of Music" which is used in a MIN/MAX II machine, a simple device that displays the stimulus printed on 8½ by 11 inch paper and conceals the answer until the response has been made.[21]

Dallin[22] points out that in 1963 only two additional programmed texts in music were available to educators: (1) *Music Makers* by Winifred Neal; and (2) *Musical Notation* by John M. Batcheller. It is very evident in Dallin's article that much has happened since 1963. He concludes his article by compiling a list of programmed instructional materials in music.

McKay[23] believes that the students' individual differences and how to cope with them in a rehearsal can be a serious problem for the instrumental conductor. His answer to this problem would be the use of programmed texts. Students were allowed to check out those texts and prepare one or more lessons at their own speed, without the help of the teacher. McKay recommends the following series: (1) *Essentials of Music* by Roger E. Chapman; and (2) *Music* 200 by Andrews, Maxson, and Lotzenhiser. *Essentials of Music* is a programmed text covering notation, major scales, rhythms, meters, minor scales, modes, intervals, triads, transposition, and terminology. *Music* 200 is a beginning music theory course subtitled "Beginning Music Theory: Principles and Applications."

L. M. Zonka[24] makes use of a new teaching technique involving the use of a cassette tape recorder. Twelve studios are equipped with Wollensak cassette tape recorders which are used to record complete half-hour lessons for students. Students take their tape cassettes home and play them; and if they have any questions, they record them on the reverse side of the cassette. During the next lesson the teacher is able to answer their question.

Zonka[25] lists some of the advantages of this system: (1) Students are able to audibly relive seven days a week the half-hour musical experience involved in a lesson; (2) practice time at home is increased by seventy-five per cent; (3) the student is able to practice exactly as he or she was shown by the teacher (the tape cassette keeps the student from practicing bad habits); (4) improved teacher performance often results; and (5) a student of any instrument can progress seventy-five per cent faster by means of the constant audible referral which the method makes possible.

Milton S. Rudy[26] has an approach similar to Zonka's. Rudy, on a Title III, ESEA operational grant, has worked on a project entitled "Programmed Instruction With Tape Cassettes for Junior High School Students." He lists the following general objectives for the project:

1. The teacher will develop his role as a facilitator of learning in a changing environment rather than a passive role — one who imparts knowledge.
2. To design learning situations that will permit a student within his capabilities to make real, true, and important decisions about his own learning; provide the opportunity to evaluate the adequacy of his actions; and, finally, to diagnose his needs according to this evaluation.

3. To design flexible groups and the appropriate strategies which will give the student, while involved in the learning process, a variety of opportunities for meaningful encounters with other human beings.
4. To develop an instructional system for information retrieval and utilization which provides students and teachers with appropriate opportunities for inquiry, exploration, experimentation, and creativity according to individual needs, abilities, and goals.[27]

Rudy,[28] after a summer of testing students, organized the programs into fifteen-minute lessons. He believes that music educators cannot involve the learner without sound; each lesson, therefore, was accompanied by the most convenient audio-instructional device available, a tape cassette.

Koskey[29] gives a number of interesting ways in which programming and/or audio-visual materials can be utilized in an effort to teach music. He believes that "animated notation" (a technique used for producing cartoons) may be used in teaching rhythmic concepts, intervallic concepts (with or without sound), four-part canon, and the analysis of form (e.g. the fugue).

Koskey[30] also recommends the filmstrip, the overhead projector, radio, and television. He gives a brief account of the basic format of programming and concludes his article with a bibliography.

Programmed Ear Training 1967-1970

A great deal of research has gone into programmed ear training. Tarratus and Spohn[31] conducted an experiment to determine if a set of taped programmed interval drills, which were developed at a large midwestern university, could be used effectively in a smaller southern state college. Two groups were given a pretest to measure their ability to distinguish intervals (ascending melodic, descending melodic, and harmonic). The following tables[32] will show the results of this research:

Table 1

*Results of a t-Test of Significance of Difference Between Pretest and Posttest for the Experimental Group**

Interval Tests	*Mean Score Pretest*	*Mean Score Posttest*	*d.f.*	*t*
Ascending	13.18	17.64	10	6.43
Descending	11.78	13.64	10	1.46
Harmonic	11.82	13.78	10	2.23

*N = 11

Table 2

Results of a t-Test of Significance of Difference Between Pretest and Posttest for the Control Group

Interval Tests	*Mean Score Pretest*	*Mean Score Posttest*	*d. f.*	*t*
Ascending	13.05	16.61	17	.618
Descending	11.22	13.66	17	4.06
Harmonic	9.78	13.50	17	4.83

The conclusions were as follows: (1) college freshmen at Northwestern State College were able to learn intervals by using the taped drill method; and (2) the improvements were shown to be statistically significant.

A similar project was conducted by Jeffries[33] in an effort to test two principles: (1) the use of small steps of increasing difficulty for presentation of interval items: and (2) the effects of knowledge of results (KR) for confirming interval judgments. Interval dictation was taught solely by means of a teaching machine and tape, visual KR being provided for students' written responses. Jeffries refers to an interesting note by Maltzew[34] who tested adults' ability to judge intervals correctly. Maltzew found that intervals judged correctly the most often included the perfect octave, perfect fifth, and perfect fourth, while intervals judged correctly least often included the augmented fourth, the minor seventh, and the minor sixth. In another study by Ortmann[35] it was discovered that in writing melodic dictation, students made most errors in interval judgment where skips were involved: the number of errors increasing with pitch distance.

Jeffries[36] concludes that drilling the intervals in random order is superior to drilling in the order of increasing difficulty. The augmented fourth, minor seventh, and minor sixth were consistently the most frequently missed intervals (this was consistent with the findings of Maltzew).

Rives[37] made a study comparing the traditional and the programmed methods for developing music listening skills in the fifth grade. He gives a brief description of both methods and sets up a control group (traditional method) and an experimental group (programmed). Rives[38] concluded that the program items tended to keep the students' attention on the listening lessons in the study.

Sherman and Hill[39] used tape recorded materials in an experiment consisting of approximately 300 different exercises and tests

(75 for each of the four instructional groups). The major hypotheses[10] underlying the investigation were:

1. Progress in the aural and visual perception of music through instruction based upon atonal organization will transfer to progress in the aural and visual perception of tonal music.
2. Students with different levels of musical ability will show equal attainment in the aural and visual perception of music under conditions of (a) selected response — aural, (b) selected response — visual, (c) constructed response — written, and (d) constructed response — vocal.
3. Students with different levels of musical ability will respond with similar attitudes toward tape-recorded self-instruction.

The unusually high degree of success achieved by the students who received laboratory and classroom instruction in contemporary practices led Sherman and Hill[11] to conclude that a "contemporary oriented" study is superior to "conventional theory" instruction.

Trythall[12] gave an account of work being done at the George Peabody College in Nashville, Tennessee. Three teaching machines were used for the purpose of developing an experimental program in intervallic, melodic, and harmonic dictation. It is interesting to note that all melodic dictation training in freshman ear training and sightsinging (Music 100A and B) was taught by means of this program. The following is an example of two of their tape designs:

Table 3

Hierarchy of Difficulty of Interval Recognition

Interval	*Rank Order (easy to difficult)*
Perfect 8	1
Major 2	2
Major 2	3
Major 3	4, 5
Perfect 4	4, 5
Perfect 5	6
Major 6	7
Major 7	8
Minor 3	9
Tritone	10
Minor 7	11
Minor 6	12

Table 4

Tape Design for Intervallic Program

Tape	*Intervals*	*Area*
1	P1, P8, M3, m6	
2	m6, m7, P8	Adjacent discrimination of new interval in already learned context
3	P1, M3, m6, m7, P8	Summary
4	M3, T, m6	Adjacent discrimination of new interval
5	P1, M3, T, m6, m7, P8	Summary
6	m3, M3, T	Adjacent discrimination of new interval
7	P1, m3, M3, T, m6, m7, P8	Summary
8	m6, m7, M7	Adjacent discrimination of new interval
9	P1, m3, M3, T, m6, m7 M7, P8	Summary
10	m6, M6, m7	Adjacent discrimination of new interval
11	P1, m3, M3, T, m6, M6, m7, M7	Summary
12	T, P5, m6	Adjacent discrimination of new interval
13	P1, m3, M3, T, P5, m6, M6, m7, M7	Summary
14	M3, P4, T, P5	Adjacent discrimination of new interval
15	P1, m3, M3, P4, T, P5, m6, M6, m7, M7	Summary
16	M2, m3, M3	Adjacent discrimination of new interval
17	P1, M2, m3, M3, P4, T, P5, m6, M6, m7, M7, P8	Summary
18	m2, M2, m3	Adjacent discrimination of new interval
19	All intervals	Summary

Similar tables exist for Major and minor melodic dictation and harmonic dictation (see article,[42] pp. 275-277). In 1968 the program had already existed for three years; the greatest number of students was then found in the highest grade area.

Further studies by Hewlett and Carlsen show the continued growth and experimentation with regard to the aural aspects of music and programming. Hewlett[43] was unable to give very much substantial information, partly due to the fact that a number of his students dropped the program and others were lost between semesters. Carlsen,[44] on the other hand, in an effort to test the hypothesis both for the effectiveness and efficiency of programmed instruction

as a means for developing aural perception of music in context, concluded the following:

> It was not possible to derive causation for accuracy or for inaccuracy in the perceptual task for any of the concepts, principally because of the heuristic process utilized in developing the perceptual materials. The fact that a number of melodies varying in complexity and arranged in some semblance of hierarchial order can be empirically shown to progress a subject to a higher level of perceptual ability does not in itself help to identify the nature of the complexity of the material, nor how that complexity relates to the development of an individual's perceptual style, nor how the independent elements within the complex material take on an interrelationship of effects.

Music Theory and Programming

Nelson[45] conducted an interesting study which was designed to evaluate the effects of the use of programmed analyses of musical works as an instructional tool in the development of nonmusic majors' perception of form and structure. He lists two principal barriers that hinder the nonmusic major: (1) inability to read adequately an orchestra score, and (2) a low level of aural discriminating power. Nelson believes that, "A program of the analysis of a composition accompanied by taped audio cues as well as the usual score references seems to hold promise as a testing device in out-of-class assignments."[46]

Nelson[47] expected that those students that completed the programmed analysis project would demonstrate a greater preference for music classified as "absolute" (an art which is complete in its own form, meaning, and beauty without dependence on some external reference) than students not exposed to this program. Three linear-constructed programs of symphonic movements were constructed: (1) rondo, (2) sonata-allegro, and (3) the theme and variations design. The control and experimental groups were assigned these compositions and were tested on a subsequent date. Each test was constructed to measure the following five skills:

1. *Rhythm.* The ability to hear basic rhythmic and metric patterns, and deviations from them.
2. *Melodic structure.* The ability to perceive and identify melodic subjects as thematic material, connecting passages, new material and relationships of melodic patterns to each other.

3. *Harmony and tonality.* The ability to perceive harmonic modifications and variations and be able to sense tonality and departures from tonality reference points.
4. *Timbre.* The ability to identify tonal characteristics of choirs of instruments and tonal variations in a single instrument (e.g., the first violin section). This skill may be considered synonymous with awareness of the dimension of orchestration.
5. *Knowledge of general form.* The ability to identify large patterns of a work and the relationship of smaller units to the whole. This skill includes a demonstration of knowledge of the particular form under study without aural reference to the music.[48]

Fink's[49] experiment with regard to programmed part writing is an effort to determine "the feasibility of teaching the basic craft of chord connection by means of a self-instructional workbook."[50] The following table[51] shows the results of his experiment:

Table 5

Mean Scores for Pretest, Posttest, and Follow-up Test

Group	*Pretest*	*Posttest*	*Follow-up Test*
Experimental	21.705	84.632	94.54
Control	23.438	70.938	82.87
Difference	1.733	13.694	11.67

The author concluded that the results of the experiment indicated that subjects learned the basic craft of chord connection effectively by means of self-instructional materials. It also appeared that, for the subjects involved, programmed learning can be a more time-consuming method than the traditional method (teacher-classroom approach).

Andrews'[52] experimental objective was to determine whether or not students in secondary school performing groups could learn music theory using self-instructional materials. A programmed textbook, an accompanying album of records, and a teacher's guide were used in the project. Topics covered in the textbook were the following:

> Meter, rhythm, tempo, note recognition (treble and bass clef), intervals, scales, key signatures, major and minor scales, modes, musical terms (tempo and dynamic), triads, chord progressions, harmonization of melodies, and timbre of the various orchestral instruments.[53]

In testing his eight hypotheses, Andrews[54] was able to conclude that the study of the theoretical aspects of music important for students in performing groups can achieve significantly better results by using materials of the type described and used during his project.

Hargiss[55] developed a programmed textbook in music theory for a music course required of students preparing to be elementary teachers. The following groups were utilized in the experiment:

Group 1. received face-to-face instruction but no programmed instruction.

Group 2. used a tentative program and participated in revising and rearranging it.

Group 3. used the program and received no face-to-face instruction.

Group 4. participated in further revision of the material.

Group 5. used the final version of the program and received no face-to-face instruction.

Results. indicated that Group 2 achieved more than the other groups. Group 5 learned as much as Group 1 and in less time.[56]

Those students in Group 2 were found to be the most successful in acquiring those skills in music theory considered essential to elementary teachers.

Another successful experiment conducted by Nelson,[57] and an article concerning the need for programmed instruction in theory by Harder,[58] led this writer to concur that programmed theory does have an important place in music education.

Other Uses of Programmed Instruction

In researching this paper the writer found a variety of experiments other than those more usual ones, being conducted in the area of "programming and music." For instance, in the field of "score and/or music reading," research has been conducted by Sidnell[59] and Dallin.[60] Sidnell[61] attempts to facilitate the growth of score reading skills of student conductors while Dallin[62] programs a text for learning to sing and play while serving as a point of departure for intelligent listening.

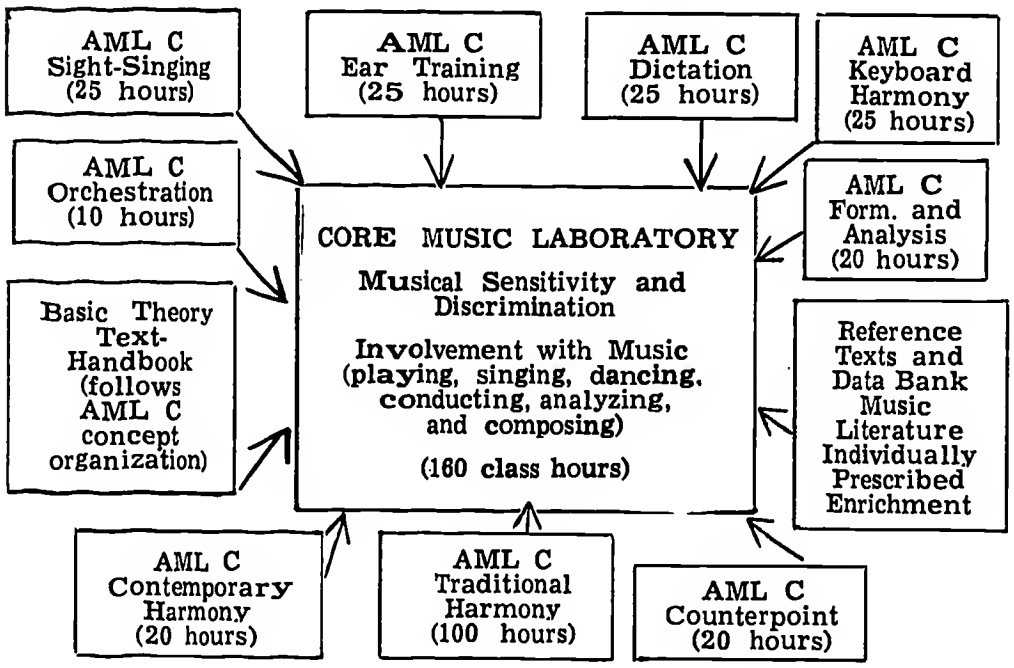
An experiment was conducted by Bigham[63] with regard to the learning of woodwind fingerings. Bigham[64] found the results of the programmed text to teach fingerings favorable and student response enthusiastic.

This writer, in addition to the preceding experiments, found a variety of research concerning programmed instruction which included: (1) instrument repair — Diamond;[65] (2) experiments in Germany — Eicke;[66] (3) effects of programming on uncooperative attitudes and/or behavior — Steele;[67] (4) the teaching of piano — Ellingson[68] and Broune;[69] (5) automated centers in the colleges and universities — Allvin;[70] and (6) experiments in the elementary grades — Wardenburg.[71]

Allvin[72] gives the following table as an illustration of how a music curriculum could be reorganized. All basic skills would be taught through programmed lessons, computer assistance, and other instructional media. The computer assumes the role of teacher in some skill development and serves as instructional manager for learning through other media. This writer found this to be one of the most interesting proposals encountered during the research of this paper.

Table 6

Reorganized Music Curriculum (Lower Division Basic Musicianship Taught in Automated Music Learning Center)



Dissertations

Smith[73] indicated that there was a need for experimental evaluation in the area of programmed instruction. Smith, in order to conduct his experiment, chose Kanable's *A Program for Self-Instruction in Sight Singing*. To assess the effectiveness of the program, a test was devised, evaluated and administered to fifty-two freshman music students at the Florida State University. The students were then assigned to four groups on the basis of pre-test scores. Group I studied the Kanable program while Group II was taught by another instructor in the classroom. The author concluded the following:

> The results of this study indicate that there is no significant difference in improvement in sight singing performance by students who receive (1) programmed instruction, (2) classroom instruction, or (3) no instruction.
>
> It was further concluded on the basis of this study that regardless of instructional procedures, sight singing performance does not improve . . . [74]

Newman[75] conducted an experiment designed to investigate the effects of programmed learning on achievement and attitude in a music course for classroom teachers. Three questions[76] were considered:

1. Do programs lead to higher achievements in terms of usual examinations for classroom music courses?
2. Are programs better used as a supplement or as a substitue for regular instruction?
3. Do programs lead to more favorable attitudes toward the course and its objectives?

Newman[77] concluded that (1) programming may lead to higher achievements; (2) if used as a supplement to conventional presentation, it might have a slightly detrimental effect; (3) it will help conserve class time; and (4) it may lead to greater satisfaction among the students.

Rizzolo[78] did a study designed to test the ability of the music student to improve his recognition of intonation errors by use of a prerecorded magnetic tape. The purpose of the study[79] was to discover to what extent the following was accomplished: (1) improve sensitivity to errors of intonation; and (2) improve recognition of intonation errors in triads and chords.

His findings were: (1) the results did not indicate the experimental method superior to the traditional one, and (2) further research was recommended.[80]

Neal O'Neal[81] conducted a study of string techniques using a programmed course with a heterogenous string methods class. The study was divided into two parts:[82]

1. A programmed textbook was developed for the heterogeneous string methods class. This was basically a Skinnerian type program dealing with five aspects of string techniques: (a) nomenclature, (b) posture, (c) tone production, (d) bowings, and (e) fingerings.
2. The second part of the study consisted of a statistical evaluation of the efficacy of the textbook in an experimental situation.

Dissertations were also written by Costanza[83] concerning programming and score reading, and Schmalsteig[84] concerning the singing of correctly produced and uniform vowels.

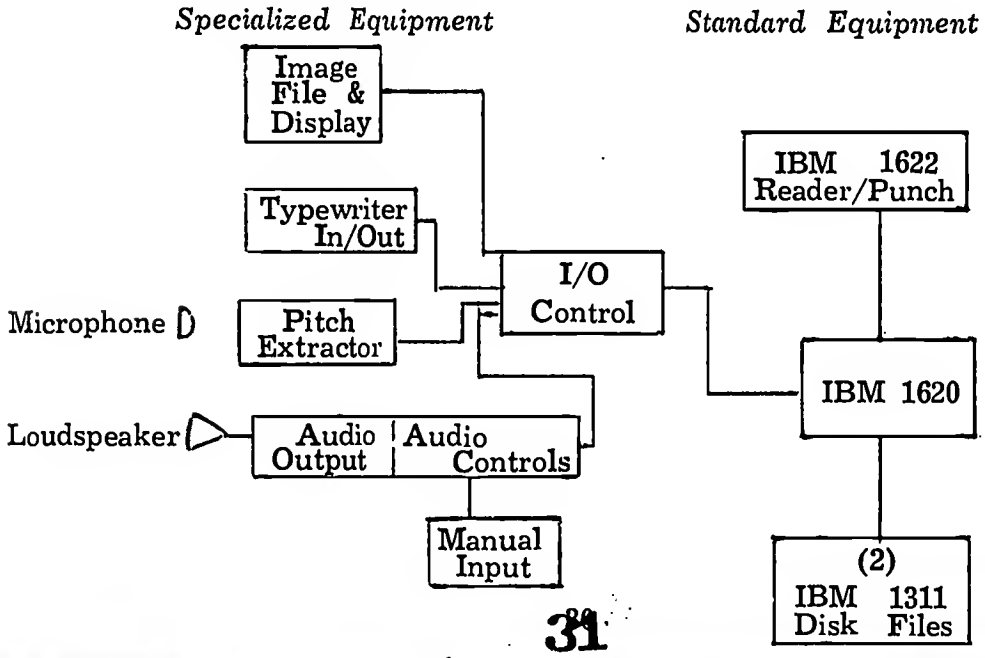
Conclusions and Recommendations

Kuhn and Allvin[85] refer to Spohn's[86] and Carlsen's[87] incorpation of techniques used in foreign language laboratories into the field of music. "Spohn developed new methods for the self-presentation of elemental materials for music, using methods and facilities of foreign language laboratories."[88] "Carlsen investigated certain variables pertaining to the development of melodic dictation ability by means of programmed learning."[89]

Kuhn and Allvin[90] give the following illustration of a computer-assisted teaching system for music learning which is being evaluated at Stanford University:

Table 7

Experimental Music Instruction System



> The existing experimental model consists of an IBM 1620 computer programmed to carry out an instructional sequence and fitted with a typewriter-like input and output, a rapid selection image file, and an experimental pitch extraction device. To this will be added a four-channel tape recorder with search capabilities.[91]

The reliability and potential of the device is rated good for the following reasons:[92] (1) in doubtful cases the system will give no report on the student's performance, rather than an erroneous one; (2) provides the structure for an instructional sequence; (3) curriculum items and exercises can be changed rather simply (variety); (4) can have programs for beginning, intermediate, or advanced students; (5) possibility for branching; and (6) allows the student to proceed at his own rate.

Hargiss[93] believes that students really do learn from programmed instruction. Research has proven this to be somewhat true if not conclusive. In comparing the traditional (teacher) to the experimental (programming), Hargiss concludes that a combination of the two is best. This writer agrees and believes that further research should seek ways to use the combination of the two rather than see which is better. In these complicated days of automation, the population explosion (possible increase of teacher-student ratio), and the quantity and diversity of knowledge that needs to be consumed, teachers will, in fact, need all the help they can get. Programming is probably here to stay.

Footnotes

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71 Robert Wardenburg, "An Experiment in Programming Rudiments of Music for Fifth Grade Students Compared to Conventional Instructional Methods," Missouri Journal of Research in Music Education, II, No. 3 (1969), 68-79.

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83 Anthony Costanza, "The Development and Evaluation of Programmed Instruction in Score Reading Skills," (LC 69-14, 502; DA XXX, 3, 1193-A).

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86 Charles Spahn, "An Exploration in the Use of Recorded Teaching to Develop Aural Comprehension in College Music Classes," Journal of Research in Music Education, XI (Fall, 1963), 91-98.

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Appendix

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Programs in Music:

1. A New Approach to Ear Trsining by Leo Kraft (Queens College, City Universtty of New York). W. W. Norton and Co., Inc., 1967. 32 magnetic tapes: $135.00 (rental $10.00); Workbook: $2.95; Instructor's Manual. Four units (each contains practice lesson, seven lessons, review, and test) plus a few lessons on special problems.

2. Classroom Melody Instruments by Les Woolfiin (Southern Illinois University). Scott, Foresman and Co., 1967. Fingerings, practice pieces, explanations for rhythm, etc. for the tonette, flutophone, song flute, and recorder. Ten lessons: pieces for groups of instruments; indexes for fingering, rhythms, meters, and pieces.

3. Essentials of Music by R. Chapman. Doubleday, 1967. 350 pages, $5.95.

4. Foundations in Music Theory by Leon Dallin (California State College, Long Beach). Wadsworth Publishing Company, Inc., 1967.

5. Introduction to Music Fundamentals by J. Austin Andrews (Eastern Washington State University), and Jeanne Foster Wardian (Whitworth College). Appleton-Century-Crofts, 1967, $3.95. Programmed text, linear presentation, 172 pages, 498 frames.

6. Music for Elementary Teachers, A Programmed Course in Basic Theory and Keyboard Conducting, by Genevieve Hargiss (University of Kansas). Appleton-Century-Crofts, 1968. Only three of the eleven chapters are programmed.

7. First Steps to Harmony, 1967. $3.75. 90 pages, 236 frames. Review of triads, part writing, voice leading, and principles of part writing.

MUSIC EDUCATION AND THE BLIND

Joan Theis Gagnepain
Washington University

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History of Education for the Blind

The earliest movements to benefit and then to educate the blind had their origin in Paris, France. It was there in 1260 that King Louis IX founded the Hospice des Quinze-Vingts to care for some three hundred blind people.[1]

However, by the eighteenth century the blind, for the most part, remained a pitiable class of destitute beggars. It was at this time that Diderot wrote his "Lettre sur les aveugles a l'usage de ceux qui voient," (Letter on the blind for the use of them who see). Because of this speculation (at that time considered extremely revolutionary by the ecclesiastical authorities), concerning ways in which blindness affected the intellectual and moral nature of man, Diderot was sent to the Bastille for three months.[2]

The interest generated by this letter (published in 1747, according to the Harvard Study of 1933), which did not deny the presence of intellectual ability in a being denied the sense of sight, stimulated the beginning of an active, but abstract and philosophical interest in the blind.[3]

Largely through contact with a remarkably trained blind Viennese pianist, organist, composer, and singer named Maria Theresa von Paradis, the philanthropist, Valentin Hauy was encouraged to found the first school for the blind in the 1780's called the "Institute Nationale des Jeunes Aveugles."[4]

Other similar institutions appeared in Germany and England and in 1829 the first such institution was founded in the United States. Designated originally as "The New England Asylum for the Blind," it is known today as the Perkins Institution and Massachusetts School for the Blind.[5]

Other such pioneer institutions appeared in the 1830's in New York and Philadelphia. At first supported by public charity, these and the other schools organized later for the blind are, for the most part, at present recognized as part of the states' responsibilties.[6]

Originally, educational institutions for the blind were strictly residential schools. Today, according to the March 1969 revision of the 1967 fifteenth edition of the *Directory for Agencies Serving Blind Persons in the United States,* fifty such schools exist. Of these schools (see Appendix i) thirty-nine are state schools, eleven are private institutions, and six provide, in addition, programs for deaf-blind children.

Since the beginnng of the twentieth century the belief has grown that the needs of blind students are the same as those of sighted students. Thus, when possible, blind youths are encouraged to remain with their families and attend regular public schools, with the special equipment, textbooks and necessary supplementary training being provided by the state and the school district. In fact the local school district is charged with the responsibility of educating *all* students in its area.[7]

Because of the movement to educate the blind with the sighted, the character of the residential school has changed greatly. According to Mr. McQuie, guidance counselor at the Missouri School for the Blind, sixty per cent of the blind in Missouri attend public schools and over one-half of the one hundred and ninety-five students at the Missouri School are now day students. Since there appears to be a tendency for more intellectually and emotionally capable students to attend public schools, students educated at a residential school are often those requiring more concentrated and specialized care, and/or individuals possessing multiple disabilities.

By 1950 the education of the blind with sighted was a reality in public education. There plans for such education are possible:

1. The Cooperative Plan — student attends regular classes and, in addition, a special class for the blind.
2. The Integrated Plan — student attends regular classes and, in addition, a full-time teacher of the blind is available.
3. The Itinerant Teacher Plan — student attends regular classes and a traveling specialist for the blind is employed for several schools.[8]

The type of plan used in a particular area depends upon the number of blind to be served and the amount of money available for the program.

From an opthalmological view an individual with less than 20/200 vision after correction or treatment is declared "blind." A person with 20/200 to 20/70 vision after correction or treatment is declared "partially seeing" and can benefit from sight saving instruction, which employs large print copies of materials and "non glare" learning situations.[9] According to Mr. McQuie, the St. Louis Public Schools in 1969 provided only two "sight saving" classes at the elementary level and none at the secondary level. At the same time in the St. Louis County Division of Special Education one "large print" class was maintained at the junior high and senior high levels.

No complete, authoritative information was available concerning the achievements of blind students in comparison with the sighted at the current time. Part of this problem results from the difficulties inherent in adapting standard achievement tests for use by blind students. Other difficulties arise from the absence of ability grouping in schools for the blind, and from the personality and guidance problems often evident in blind children or their parents.[10]

An adaptation of the Seashore Measures of Musical Talent in Braille for group use by the blind was developed by Hortense Forman, Director of Music at the Tennessee School for the Blind. Ac-

cording to Miss Forman, the adaptation proved quite successful, except for the section of the test involving tonal memory. Administered to selected students from grades seven to twelve, the results showed that the Braille format developed by Miss Forman was easy to use, the test could be used on either an individual or a group basis, and the scores were as reliable as among sighted students."

Upgrading the standards of teacher preparation will probably also boost the achievement level of blind and multiple handicapped students. The Association for the Education of the Visually Handicapped, known as the American Association of Instructors of the Blind (AAIB), prior to the Summer of 1968, has a program of teacher certification adhered to by many private and state institutions.[12] At the Missouri School for the Blind a state teaching certificate is required. Specialized work in blind education may be taken in addition. Certificates for "Instructor of the Blind" and/or "Instructor of the Partially Sighted" are available.

Systems of Musical Notation for the Blind

While it is true that learning music by rote or by "ear" has some value, it also denotes a dependence upon another person's melodic phrasing, tempo, dynamics, in brief, his general interpretation of the music. Preparation for reading is of extreme importance for the blind musicians, for music reading is just as necessary for him as it is for one with sight. It is the only way to open the door to independence within the realm of music.[13]

The development of a workable, international system of notation that could be tactually comprehended was formulated over a period of many years. It was not until February, 1963, that the American Printing House for the Blind (APH), released the new *International Manual of Braille Music Notation,* the culmination of a movement for an International musical code begun in 1954.[14] However, there was an earlier, but unsuccessful movement to standardize the symbols of music notation which was centered in Paris in 1929.[15]

Braille music notation is not the only such system in existence today, but though it is often criticized, it is the most widely used system at present.

The first attempts at a reading system for the blind were raised reproductions of the symbols used by sighted persons. A French officer, Captain Charles Barbier, was the first person to use embossed dots instead of raised lines for the alphabet and other symbols. Though he developed a perforated state, the system was still awkward.[16]

Louis Braille (1809-1852) a brilliant student and organist in

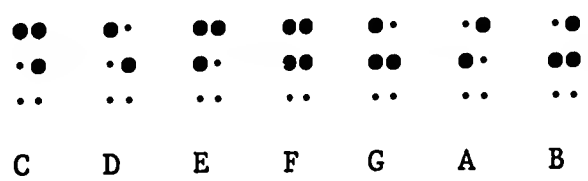
Paris, who had been blinded at three years of age, adapted the principle of embossed dots and developed it into an efficient system, still basically in use today. The six dot cell (⠿), the maximum number of dots the index finger can comfortably cover, is the basis of all three codes (mathematical, literary, and musical) in the Braille system. Embossing or raising certain dots in the cell transmits by touch a certain pattern to the blind. By raising different patterns of dots in each cell, sixty-three symbols are formed, which represent all twenty-six letters of the alphabet, all numerals, punctuations, and contractions. In addition these sixty-three patterns represent all facets of music notation, but in a symbolic, not a graphic manner as is found in regular staff notation.[17]

The music symbols formed by a combination of dot patterns are thus horizontally written out. Therefore in order to "read" chords or scores which show combinations of instruments and/or voices, a knowledge of form and theory is an absolute prerequisite to music reading for the blind musician. This approach is very different from a sighted student's first encounter with music notation. The sighted student (if he ever learns it) usually becomes acquainted with phrase identification, motivic development, and analysis of form only *after* he has been "reading" music for some time.

Though a preliminary knowledge of literary Braille is preferred, the following material is presented as a brief introduction to Braille music notation. The piano keyboard, which encompasses the range of most instruments, is divided into seven octaves, plus a lower octave and an upper octave. Appendix ii shows this division. Thus there are nine octave markings, which are placed before each new line and before any note where a change of octaves occurs or a skip of a sixth or more is to be indicated within an octave. The following verse is helpful in learning how and when to mark octaves: "Never mark a second or third; Always mark a sixth or more; Fourth or fifth; Only if; It should leave the octave."[18] In section B of Appendix ii, octave signs are given for the octaves most used in school music.

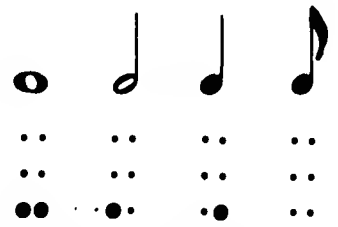
Each octave begins with **C** and ends at B. Following (Fig. 1) are the Braille symbols for the octave:

Fig. 1—

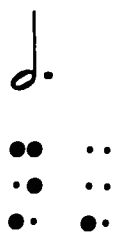


Here as in all the symbols the six dot cell ⠿ numbered 14 / 25 / 36 is the core of the entire notation system.

In the pitch symbols listed above, notice that only dots 1, 2, 4, and 5 were used. Time values are assigned to these by adding dots 3 and 6. Some of the most common are Fig. 2—

Fig. 2 -- 

Therefore the notes represented in Fig. 1 would all be eighth notes, since dots 3 and 6 are never used. If a note is to be dotted the third dot in a second cell is used. A dotted half note on "C" would be as in Fig. 3—

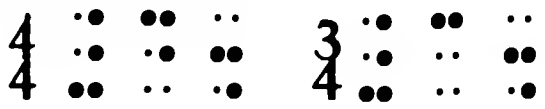
Fig. 3 -- 

Bar lines are represented by a space. A heavy double bar is indicated by: ⠾⠾ / ⠾⠒ / ⠒⠾

and represents the conclusion of the piece or movement. The light double bar ⠾⠾⠒⠒ / ⠾⠒⠒ / ⠒⠾⠾ is used to show the end of a musical section.

There are also various signs for different time signatures. A time signature is always preceded by the number sign: ⠼ / ⠒⠾ / ⠾⠾

Examples are found in Fig. 4—

Fig. 4 -- 

In Braille notation the time signature and key signature are given in the center of the line above the Braille transcription. No clef signs are used. (Appendix ii C).

Rests are indicated: Fig. 5— Whole ⠶ ; Half ⠦ ; Quarter ⠲ ; Eighth ⠢ .

Three measures of rests would be shown as: ⠶ ⠶ ⠶

which literally translates as three whole rest signs. For four or more measures rest a number sign is also used. Thus for six measures of rests the sign would be: ⠼ ⠶ ⠶

Accidentals are represented as follows: Flat sign(♭): ⠩, Sharp sign (♯): ⠣, and the Natural sign (♮): ⠡

Other signs frequently used include:

1. The slur— ⠒ If two notes are to be slurred, the slur sign is placed after the first note. If three or more notes are to be slurred, the slur sign is doubled after the first note and placed again before the last note slurred.

2. First ending— ⠼ ⠅ Second ending— ⠼ ⠃

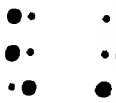
3. The tie ⠤ This symbol is placed between the notes tied.

4. The repeat sign— ⠨ Numerous variations for repeat signs exist in Braille transcription. For example at the close of a first ending a "backward repeat sign" is used ⠆

Appendix ii C provides a short example employing some of the patterns just discussed.

Harmony can be represented in Braille in two ways:

1. Intervals—If "A" and "E" are to be sounded together, "A" is represented as one, "B" as two, "C" as three, "D" as four, and "E" as five. The Braille is then written as "A" with its fifth interval if it is in the lower range and/or meant to be played by the left hand. It would be read down as "E" with its fifth interval if it were in the upper range and/or meant to be played with the right hand. Appendix ii D shows the method for notating a four note chord played by both the right and left hand. One can notice the similarity between the Braille directions and the figured bass principle in ordinary notation.

2. The "Measure-In Accord" Sign—  indicates that the notes preceding this sign are sounded together with the notes following the sign.

The previous discussion of Braille notation is a general, yet brief summation by the author of several articles and charts on the subject."

That the Braille system is capable of symbolizing all elements of standard music notation is an established fact. However, except for a few instruments, (such as the violin, the cornet, and the tuba) it is not possible to read and play at the same time. Thus memorization is an absolute necessity. In using Braille notation the method is "to read, remember, and play."

Two outstanding individuals in the field of Braille music are Sister Mary Mark, Dean of the School of Music at Immaculate Heart College at Los Angeles, and Lenore McGuire, lecturer in education at the same institution. They have written two books which demonstrate their method for the young blind piano student entitled. *Read, Remember, and Play* and *Piano for the Blind Child.* Both books, obtainable from the Office of Faculty Publications at the College, stress extensive preparation for Braille music consisting of note learning, relaxation at the keyboard, knowledge of music notation and structure, and three years of literary Braille.[20] With logical and imaginative teaching, Sister Mary Mark feels Braille notation can be made attractive to the blind child.[21]

Mr. Donald Wiley also has developed a similar method for piano students which again stresses the necessity of adequate preparation for music reading.[22]

Because the Braille notation system can reproduce all musical

symbols and directions, it has a large following. There is obviously a need for continued efforts in increasing and maintaining a quantity of Braille music. The part played by voluntary groups and individuals in transcribing music into Braille cannot be over estimated. Two volunteer honorary music groups, Mu Phi Epsilon and Sigma Alpha Iota have adopted Braille transcripton projects.[23] Another volunteer organization of transcribers of quite a different nature is the group of prisoners at the Jackson State Prison in Michigan. These prisoners, three of whom possess transcription certificates from the Library of Congress, transcribe over ten per cent of that state's music. A similar program is being initiated in Indiana at the present time.[24]

A national program for making Braille music available came into existence because of two identical Congressional bills: H.R. 12038 proposed by Representative Robert J. Corbett of Pennsylvania on June 6, 1962; and S.3408 proposed jointly by Senators Wayne Morse of Oregon, J. J. Hickeye of Wyoming, and Mike Mansfield of Montana. Signed into law by the President on October 10, 1962, the Library of Congress was authorized and funded to establish and maintain a library of specialized materials for the blind. All available Braille music scores were purchased from the APH in Kentucky, the Howe Press in Watertown, Mass., the Royal National Institute for the Blind in England, and the Scottish Braille Press in Edinburgh as well as from other presses in Europe and the Americas.[25]

In addition, a program to transcribe Braille music was begun by the Library's Division for the Blind and Physically Handicapped, which would certify both blind and sighted transcribers. A central card catalog, the Union Catalog of Braille Music Materials, and a free correspondence course in Braille were also established.[26]

Although the Braille system carries with it an aura of stability and tradition, not all musicians and instructors of the blind find it satisfactory. Estella Meyer Macbride speaks of the frustrations encountered in piano music involving complex chord patterns and interwoven threads of notes. She strongly favors the use of tapes and recordings in learning music, though she does admit to a dependence upon the interpretation and accuracy of the recording pianist.[27]

Another method of notation for the blind was developed by Eve Welbourne, which uses a raised number system (from one to seven), which represents the melody and is read with the left hand. A raised alphabet (letters "A" to "G") represents the chords, which

are read with the right hand. Various kinds of dots and diagonal lines are used to represent additional music symbols."

A piano method for partially seeing students was developed by Gilbert Stoesz and Robert Bowers, which seems to follow a clear, logical, yet enjoyable approach." The authors recommended special music holders, large print solos, staff papers, editions, and printing companies. Appendix iii offers a partial listing of these items and organizations.

Instructional Materials: Created for or Adapted to Music Education for the Blind

The current revolution in education, which concentrates more and more on the adaptation of electronic mechanisms and computers to classroom use, offers exciting possibilities for change and improvement in the education of the blind. Though the Division for the Blind and Physically Handicapped in the Library of Congress was established as a national center for reference, storage, and dissemination of all educational and recreational materials for the blind, many advances in techniques, materials, and methods originate in regional or local centers. Only a few of the most noteworthy developments can be listed here

One such center is The Instructional Materials Development Center at Michigan University, which was established with funds from Title I of the Elementary and Secondary Education Act. The purpose of the Center which serves Michigan, Ohio, and Indiana is to provide an opportunity to conduct experimental work in instructional materials which are necessary to give the visually impaired child the best possible aids to his education. The Center has produced special attractive large print books, and has transferred tapes and recordings to easy-to-use cartridges."

A multi-sensory instructional package was developed by the Center to assist blind and/or partially sighted students in instrumental music. This method seeks to support Braille notation and ear methods of learning through an integrated use of tapes." Regular staff notation shows both the vertical and horizontal aspects of the music. However, as Mr. Levine points out in several articles, Braille notation is a linear notation showing only one symbol at a time. This would be similar to a sighted person learning a solo spelled out note by note on a regular typewriter. Thus Braille notation must be memorized a few measures at a time, and the possibility of absorbing or even becoming aware of the overall context and scope of a composition is nonexistent. To solve this problem,

which leads to frustration in learning a Braille work, the Center developed the "Recorded Aid for Braille Music." This study pack contains four items:

1. a tape of the music
2. a Braille transcription of the music
3. a large print ink copy of the music
4. a regular printed edition of the music.

The tapes play the selection in three different ways:

1. Reduced tempo of solo part played alone with metronome.
2. Solo played at regular tempo without accompaniment.
3. Solo played at regular tempo with accompaniment.

This allows the student to hear how his part fits into the entire musical context."[22]

A pilot study of this method was made at the University, which proved to be quite successful. Selections for the instructional packs were carefully chosen, and the instrumental tapes were made by specially selected graduate students. Advantages of the "Recorded Aid for Braille Music" are obvious. The regular printed edition included makes the program accessible to sighted teachers in the public schools. Independent study is greatly enhanced, for the tapes can be repeated at will and as often as necessary. Finally, depending upon the needs and capabilities of the students, either the note or rote aspect of the method of instruction can be emphasized.[23]

Plans call for two thousand copies, (eighty-five titles for band and orchestra) to be produced during 1969 with funds from the Division for the Blind and Physically Handicapped in the Library of Congress. However, there is a great need to develop similar materials for keyboard and vocal instruction as well. According to Mr. Levine, the eventual goal will be an extensive catalog of multisensory music materials that will be available to all blind musicians.[24]

The "Autobraille" is another development of the Instructional Materials Center at Michigan University. By using computers and other mechanical devices, instead of paper, it forms a new alternative to Braille books. The tactual communication of the text material is accomplished by the student from his table top device which is electronically activated by a nearby control unit. Thus by utilizing ordinary Braille techniques, the student can make use of a light-weight portable medium for Braille reading.[25]

The "Autobraille" method allows for easy storage (minimum

space), and easy portability (in comparison to a bulky Braille book). It also avoids the deterioration evidenced on Braille paper surfaces. Finally, the contents of each cartridge can be economically transmitted from one place to another via telephone channels or electronic devices.[36]

A brief description of "Autobraille" must concentrate on the two aspects or parts of this device.

1. Generating — Tonal Storage Tapes — The symbols of natural language are converted into the sixty-three Braille symbols. These symbols are in turn translated by computer into a tonal code similar to that used in the Bell System's "Touch Tone." These "master" tonal tapes are then duplicated and handled by inexpensive recording and display devices.
2. Converting Tonal Data into Tactile Display — This transfer requires three pieces of equipment:
   a. Seven inch reel of one-fourth inch audio tape containing the tonal data.
   b. Table "Display Device" with a line of thirty Braille cells, a "Next Line Please" button, and a "Back Up Please" button.
   c. Control Unit — which holds the reel and is similar in shape and size to a portable tape recorder.

This Control Unit activates certain cell patterns by raising the correct dots in each of the thirty cells on the Display Device. When the student reads the line on the Display Device, he presses the "Next Line Please" button and the Control Unit activates the next line of Braille symbols in the text.

Transmissions of the tonal data at the rate of one thousand words per minute through commercial telephone devices, and even higher rates on special wide band equipment for inter library transmission make the communication economical and timely. In addition the operation of the equipment by a student consists of merely inserting a tape cartridge into the Control Unit, switching on the Display Device and operating the forward and back-up buttons as needed.[37] These and the advantages listed previously seem to indicate large scale utilization of this device in the future, though no evidence relating to the amount of current usage could be determined by the author at this time.

The Lighthouse School — A Music School for the Blind

Though as a group the blind show no special aptitude for music, it is an art in which they may participate fully, for the absence

of sight often makes aural absorption more feasible and complete. The Lighthouse Music School in New York City is a special type of school serving students from the five boroughs of New York and outlying districts. Originated in 1905 by Winifred and Edith Holt, the school today is part of the twenty-nine services offered by the Lighthouse, a local voluntary agency supported by the public.[38]

The present staff, composed of blind and sighted teachers, works with approximately two hundred students each week of the September to June academic year. The ages of the students range from pre-school years to the occasional octogenarian. A member of the National Guild of Community Schools since 1961, the Lighthouse School admits all who love music, are blind or have partial vision, and have a desire to study.[39]

The school professes a three-fold purpose of music in the educaitonal program of the blind:

1. For a small group of people it serves as training for an eventual career.
2. For a somewhat larger group it offers therapeutic value, especially for those blinded later in life.
3. For the great majority it provides cultural enrichment.

Therefore, to fulfill the needs demanded by the diverse abilities of the students and to develop within each student a free, confident manner at the instrument, three types of certificates are awarded by the school:

1. The First Certificate—is awarded to a student who completes elementary work in his instrument and knows basic principles of theory, eurhythmics, and solfege.
2. The Second Certificate—is awarded to a pupil who successfully completes instrumental work at the intermediate level, music history and related principles of musicianship, and chromatic harmony.
3. The Third Certificate — is a diploma awarded for advanced work in an instrument, counterpoint, advanced harmony, music literature, and history.[40]

The school has maintained a fine reputation under the direction of George G. Bennette, a blind concert pianist and graduate of Oberlin and Juilliard and his predecessor, Charles J. Beetz. Students from the school have secured scholarships to Juilliard, The Cape Cod Music Center, Ethan Allen Music Center, and the Manhattan School of Music. In addition, others have been enabled to work with outstanding teachers. The excellence of the school may be ascer-

tained also from observing the membership of its advisory board, which is headed by Leonard Bernstein and includes William Schuman, Rise Stevens, Lauritz Melchoir, and Milton Cross among others."

The curriculum of the school includes:

1. Music Theory
   a. Classes in Dalcroze Methods (eurhythmics and solfege)
   b. Private lessons in advanced harmony
2. Performance Experience
   a. Assemblies — regular participation by capable students is required.
   b. Concerts — public concerts, faculty and student recitals.
   c. Ensembles — chamber groups of strings and winds, piano duos, jazz groups, and vocal groups, including "The Lighthouse Singers," a group first organized in 1944.
3. Instruments — piano, strings (violin, viola, cello, bass, guitar), accordion, percussion, winds (brass and woodwinds), and organ.
4. Jazz Improvisation
5. Music History and Appreciation
6. Opera Workshop
7. Braille Transcription — an eight month course for sighted persons.
8. Staff Notation — It is readily admitted by those connected with the school that the system of Braille notation has been important to the institution's success. However a knowledge of staff notation is considered important in the education of the blind student, for it enables him to comprehend this terminology when encountered in music texts and to work adequately with and teach sighted students. The "Notation Graph," invented by the former director of the school, Charles Beetz, aids the blind student in this facet of his education. The graph consists of a cork surface and heavy wire notation symbols which are attached to the cork to form any desired example of staff notation."

The school publishes a quarterly magazine, *Overtones*, designed for both professional musicians and lay people. In addition to a library of vocal and instrumental Braille music and a record library, the institution has cultivated and nurtured a library of hand-copied, large-print music for the last twenty-five years. The collection of instruments at the school includes twenty pianos (seven are Steinway grands), string and wind instruments, an electronic organ, a

one manual harpsichord, and a two manual pipe organ built for the school in 1966.[43]

The facilities, equipment, staff, and supporters of the Lighthouse Music School have, since its opening in the early part of the twentieth century, exhibited a spark of light, a bright example in the area of music education for the blind. At this time, after several inquiries and much searching, the author has been unable to find another institution of this type and quality.

Some National Centers That Communicate Information Concerning Music Education and the Blind

Several national centers concerned with music materials and information pertaining to the blind offer service to the layman, the educator, and the instruction specialist for the blind.

The Division for the Blind and Physically Handicapped in the Library of Congress became in 1962 the central source of music material for the blind by an act of Congress. By 1967 the Division claimed twelve thousand volumes of Braille music, Braille books about music and musicians, talking books, and magnetic tapes. All of these items are circulated free of charge to any blind person in the United States or its possessions. Included in this paper is a bibliography (see Appendix iv) compiled by Mrs. Mary Mylecraine, Reference Librarian of the Division. Some additions, corrections, explanatory comments and deletions were made in the basic list by the author where applicable to the structure and purpose of this paper.

In addition to the program mentioned earlier which trains and certifies Braille transcribers, the Division is working to fill the gap in Braille music materials now available for the young child and the college student.

Though listed in Appendix iv A, three centers deserve special mention here because of their tradition of service and/or work at the present time. The American Printing House for the Blind (APH) conducts a program of research in materials and equipment for the blind. The American Foundation for the Blind has worked for many years to support all phases of training and work for the blind. Finally, the American Association of Instructors for the Blind (AA IB), now known as the Association for the Education of the Visually Handicapped, besides establishing a program for teacher certification, has worked with the Division in publishing and providing Braille materials.

Conclusion

Now came the herald along, leading the most revered singer,

The muse's beloved to whom both evil and good had been granted;

For she took the sight from his eyes

But gave him the gift of sweet music.

Odyssey Book VIII
38-40

As these lines from Homer and the following statements indicate, the blind and the art of music have been linked often together throughout history. Many distingushed composers and performers were blind. Among them were Ossian, the Celtic bard, Francesco Landino, Hermando de Cabezon, Bach in his last years, Louis Braille and fifty other Parisian organists of his time, Delius, Jean Langlais, and George Shearing.

The study of music education for the blind therefore seems a worthy endeavor, since it is today's educational system which must bear the responsibility for the training and preparation of the gifted blind musician of tomorrow.

This paper has attempted to present basic information and developments in the field of music education for the blind. No broad generalization or concrete conclusions can be drawn at this time, for information concerning national standards and programs of music education in the various schools for the blind does not exist in any useable form. Therefore, because of the apparent void concerning the activities of all institutions for the blind, it would have been unwise, unfair, and impracticable to present a critique and analysis of an individual school as originally intended by the author. Instead a report of current trends, techniques, and general information concerning this field was attempted, a report necessarily based upon and limited by the data available at present.

Much further study, survey, and investigation of all schools with music programs for the blind is necessary before any worthwhile evaluation of systems can be attempted.

It is hoped that this paper will serve as a starting point to further in-depth work in the field of music education for the blind.

APPENDIX i

State Residential Schools for the Blind

- Alabama Institute for Deaf & Blind
  South Street
  P. O. Box 268
  Talladega, Alabama 35160

* Arizona State School for the Deaf & Blind
  1200 West Speedway
  P. O. Box 5545
  Tucson, Arizona 85703

* Arkansas School for the Blind
  2600 West Markham
  Little Rock, Arkansas 72203

*°California School for the Blind
  3001 Derby Street
  Berkeley, California 94705

* Colorado School for the Deaf & Blind
  Colorado Springs, Colorado 80903

- Connecticut Institute for the Blind
  Oak Hill School
  120 Holcomb Street
  Hartford, Connecticut 06112

* Florida School for the Deaf & Blind
  St. Augustine, Florida 32084

* Georgia Academy for the Blind
  Macon, Georgia 31200

* Hawaii
  Diamond Head School
  3440 Leahi Avenue
  Honolulu, Hawaii 96815

* Idaho School for the Deaf & Blind
  14th and Main Streets
  Gooding, Idaho 83706

- Hope School
  Hazel Lane, R.R. 3
  Springfield, Illinois 62707

*°Illinois Braille & Sight Saving School
  658 East State Street
  Jacksonville, Illinois 62650

* Indiana School for the Blind
  7725 College Avenue
  Indianapolis, Indiana 46240

* Iowa Braille & Sight Saving School
  1002 G. Avenue
  Vinton, Iowa 52349

* Kansas School for the Blind
  1100 State Avenue
  Kansas City, Kansas 66102

* Kentucky School for the Blind
  1867 Frankfort Avenue
  Louisville, Kentucky 40206

* Louisiana State School for the Blind
  1120 Government Street
  Baton Rouge, Louisiana 70802

* Louisiana State School for Negro Blind
  Southern University Branch
  P. O. Box 10174
  Baton Rouge, Louisiana 70813

- The Maryland School for the Blind
  3501 Taylor Avenue
  Baltimore, Maryland 21236

-*°Massachusetts
  Perkins School for the Blind
  175 N. Beacon Street
  Watertown, Massachusetts 02172

*°Michigan School for the Blind
  715 W. Willow
  Lansing, Michigan 48906

* Minnesota Braille & Sight Saving School
  Faribault, Minnesota 55021

* Mississippi School for the Blind
  1252 Eastover Drive
  Jackson, Mississippi 39201

* Missouri School for the Blind
  3815 Magnolia Avenue
  St. Louis, Missouri 63110

*°Montana School for the Deaf & Blind
  3800 Second Avenue North
  Great Falls, Montana 59401

* Nebraska School for the Visually Handicapped
  824 - 10th Street
  Nebraska City, Nebraska 68410

- New Jersey
  St. Joseph's School for the Blind
  253 Baldwin Avenue
  Jersey City, New Jersey 07306

* New Mexico School for the Visually Handicapped
  P. O. Box 457
  Alamogordo, New Mexico 88310

- New York
  Lavelle School for the Blind
  221st Street and Paulding Avenue
  New York, New York 10469

-*°New York Institute for the Education of the Blind
  999 Pelham Parkway
  New York, New York 10469

* New York State School for the Blind
  Batavia, New York 14020

North Carolina
The Governor Morehead School
Raleigh, North Carolina 27606

North Dakota School for the Blind
500 Stanford Road
Grand Forks, North Dakota 58201

Ohio State School for the Blind
5220 N. High Street
Columbus, Ohio 43214

Oklahoma School for the Blind
3300 Gibson Street
Muskogee, Oklahoma 74401

Oregon State School for the Blind
700 Church Street, S.E.
Salem, Oregon 97310

- Pennsylvania
Overbrook School for the Blind
64th Street and Malvern Avenue
Philadelphia, Pennsylvania 19151

- Pennsylvania
Royer-Greaves School for the Blind
Soth Valley Road
Paoli, Pennsylvania 19301

- Western Pennsylvania School for Blind Children
Bayard at Bellefield Avenue
Pittsburgh, Pennsylvania 15213

Puerto Rico
Institute for Blind Children
Fernandez Junco Avenue
Stop 19, Asnturce
Puerto Rico 00915

South Carolina School for the Deaf & Blind
Spartanburg, South Carolina 29301

South Dakota School for the Blind
Aberdeen, South Dakota 57401

Tennessee School for the Blind
Donelson, Tennessee 37214

Texas School for the Blind
1100 West 45th Street
Austin, Texas 78756

Utah Schools for the Deaf & the Blind
846-20 Street
Ogden, Utah 84401

Virginia School for the Deaf & the Blind
Staunton, Virginia 24401

Virginia School at Hampton
Hampton, Virginia 23368

#*Washington State School for the Blind
2214 E. 13th Street
Vancouver, Washington 98663

West Virginia Schools for the Deaf & Blind
Romney, West Virginia 26757

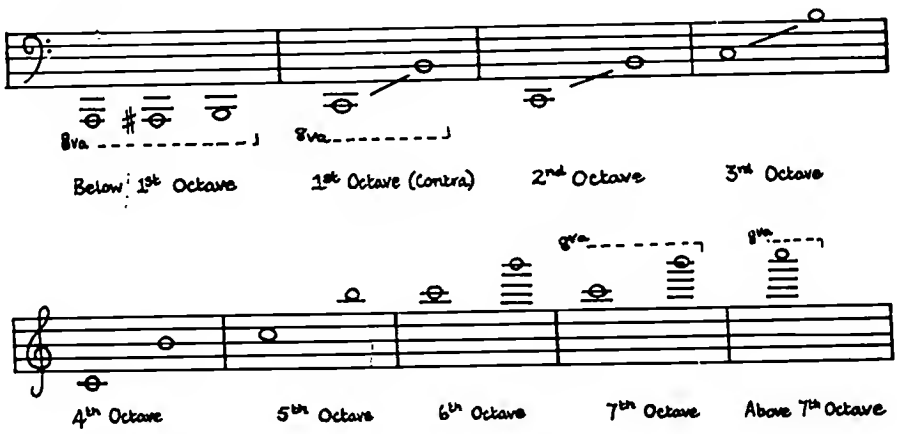
Wisconsin School for the Visually Handicapped
1900 W. State Street
Janesville, Wisconsin 53545

KEY: # State Schools
- Private Schools
* Has also a program for deaf-blind

KEY: # State Schools
- Private Schools
* Has also a program for deaf-blind

APPENDIX ii

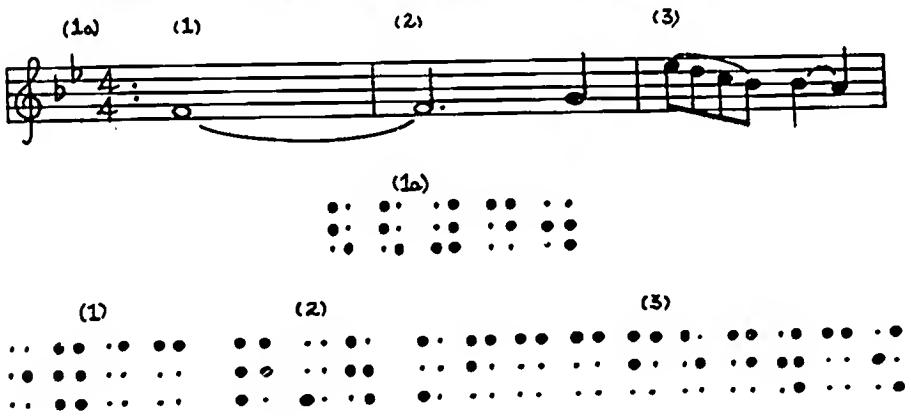
A OCTAVES



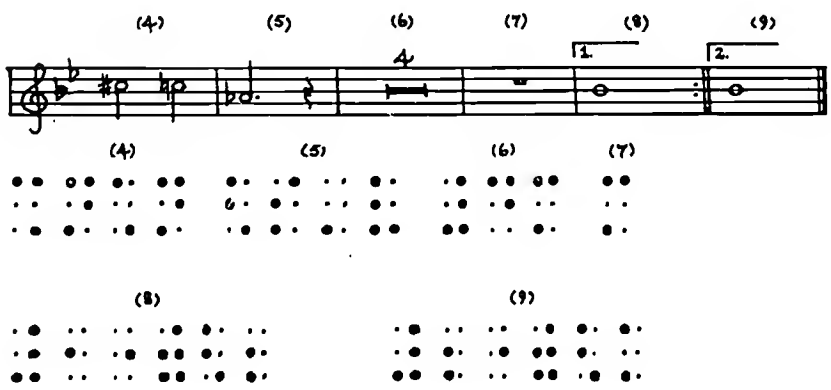
B OCTAVE SIGNS (Most frequently used in school music)

C MUSIC EXAMPLE: (A single instrumental part of a portion of a composition for band)

Measures are numbered above the regular notation and above the Braille notation. The time and key signatures are designated (1a).

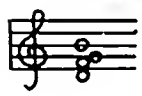


APPENDIX ii - Continued



D HARMONY

Only the first note of the chord is written. Other notes are represented from the lowest to the highest (left hand) or the highest to the lowest (right hand) by signs indicating the interval formed with the one note that is represented.



Read for the right hand (down) this is fourth octave "D", whole note, interval of a third, interval of a fourth, interval of a sixth.
Read for the left hand (up) this is fourth octave "D" whole note, interval of a third, interval of a fourth, interval of a sixth.
Note the similarity to the figured bass symbols for this chord: $\frac{4}{3}$.
It also shows to the blind student that this chord is the second inversion of the V7 in "C" Major. It's the V7 in the Key of "C."

APPENDIX iii

A COMPANIES THAT PUBLISH LARGE PRINT EDITIONS:

1. Boston Music Co.
   116 Boylston Street
   Boston, Massachusetts

2. Charles H. Hanson Publishing Co.
   119 West 57th Street
   New York, New York

3. MIlls Music Co.
   1619 Broadway
   New York, New York

4. B. F. Wood Co.
   1619 Broadway
   New York, New York

5. Materials in 12 point type - Library of Congress, Division for the Blind and Physically Handicapped - Circular 64-3

B EXAMPLES OF ELEMENTARY PIANO SOLOS IN CLEAR PRINT EDITIONS:

1. Erb, M., "Little Miss Bluebird," Boston Music Co.

2. Wrag, James L., "Trill Waltz," Willis Music Co., Cincinnati, Ohio.

3. Obenchain, L., "My New Red Scooter," G. Schirmer Inc., New York, New York.

C ADJUSTABLE MUSIC RACK FOR UPRIGHT PIANOS:

American Printing House for the Blind - Catalog No. I-0344.

APPENDIX iv

A - SOURCES OF MATERIAL RELATING TO MUSIC FOR THE BLIND

AFB: American Foundation for the Blind, 15 West 16th Street, New York, New York 10011. (Information and appliances.)

APH: American Printing House for the Blind, 1839 Frankfort Avenue, Louisville, Kentucky 40206. (Periodicals, scores, texts, and appliances available for purchase.)

BIA: Braille Institute of America, 741 North Vermont Avenue, Los Angeles, California 90029. (Scores.)

CNIB Canadian National Institute for the Blind, 1629 Bayview Avenue, Torontu, 16, Ontario. (Library and transcription services for Canadian citizens.)

Division for the Blind and Physically Handicapped, Library of Congress, 1291 Taylor Street, Northwest, Washington, D.C. 20542. (Periodicals, scores, texts on loan; informational material on transcribing, teaching; list of volunteers, Union Catalog of Music Materials, etc.)

Judy Company, 310 North 2nd Street, Minneapolis, Minnesota 55401. (Music flannel board kits.)

List "F" - Special Resources for Reading and Educational Materials, Directory of Agencies Serving Blind Persons in the United States Fifteenth Edition, American Foundation for the Blind, Inc., New York, 1967; revised March, 1969, pp. 221-227.

Louis Braille Foundation for Blind Musicians, Inc., 112 E. 19th Street, New York, New Ynrk 10016. (Occupational counseling, Music transcription service.)

National Society for the Prevention of Blindness, Inc., 16 E. 40th Street, New York, New York 10016. (Information of blindness.)

New York Association for the Blind, Lighthouse School of Music, 111 E. 59th Street, New York, New York 10022. (Curriculum especially adapted to the needs of blind students.)

Perkins School for the Blind, 175 North Beacon Street, Watertown, Mass. 02172, Howe Press: (Scores, texts, and appliances available for purchase.) Library: (Scores and texts on loan; reference material.)

Recording for the Blind, Inc., 215 East 58th Street, New York, New York 10022. (Music texts read on tape - available on loan.)

RNIB: Royal National Institute for the Blind, 224-6-8 Great Portland Street, London W.I, England. (Scores, texts, periodicals and appliances available for purchase.)

Directory of Agencies for the Blind in the British Isles and Overseas - Contact the Library of Congress.

B - CATALOGS OF BRAILLE MUSIC

Catalog of Music Publications, Revised. APH 1963.

Supplement of Music Selections Formerly Available from the Illinois Braille and Sight Saving School. APH 1966.

Catalog of Braille Music. Howe Press of Perkins School for the Blind, 1966.

Braille Music Catalog. RNIB 1965.

C - BOOKS ON BRAILLE MUSIC

Ashcroft and Henderson. Appendix E. Programmed Instruction in Braille. Stanwix House, Inc., 1963.

Braille Notation. Grove's Dictionary of Music and Musicians, pp. 903-906. St. Martin's Press, Inc., New York, 1954.

Jenkins, E. W. Braille Music Chart, New Revised Edition. (Available in both print and Braille) APH 1960.

Meneth, A., A Dictionary of Braille Music Symbols, APH 1953.

Spanner, H. V. Lessons in Braille Music, American Edition. (Available in both print and Braille) APH 1961.

Spanner, H. V. Revised International Manual of Braille Music Notation, American Edition. (Available in print and Braille) APH 1961.

D – ARTICLES FROM PERIODICALS

"Braille Helps Them Memorize Music," Music News, April, 1950.

"Burgeoning Braille Project, The," Pan Pipes, Vol. 57, 1964.

"Division for the Blind, Library of Congress," Pan Pipes, Vol. 59, 1966.

"Dorling, L. C.. "Music for the Blind." Boston Sunday Herald Magazine, October 10, 1965.

Follmer, G. M. "Music Through Touch: Braille Scores for the Blind," Music Journal, April, 1951.

Gallozzi, C., "A Music Library for the Blind," Music Journal, October, 1957.

Mylecraine, M., "Music Selections for the Blind to be Made from NFMC Junior Festivals Bulletin," Music Clubs Magazine, February, 1967.

————. "SAI's Braille Music Transcription Project Moves Forward," Pan Pipes, Vol. 56, 1963.

Sansone, R., "Braille Music Projects Profile, 1959-1966," Pan Pipes, Vol. 59, 1963.

Stoddard. H., "How the Blind Read Music," International Musician, March, 1952.

————, "Transcription of Music Braille by a Group of Women in Los Angeles," Christian Science Monitor, May 28, 1966.

U. S. Congress, Senate Committee of Rules and Administration. Establishing in the Library of Congress a Library of Music Scores for the Use of the Blind: Report to Accompany S. 3408, Washington, U. S. Government Printing Office, 1962.

Wintle, M. J.. "Answer to the Blind Musician's Plight," The New Outlook for the Blind, April, 1964.

E – CORRESPONDENCE COURSES

Music Appreciation (Braille and disc). The Hadley School for the Blind, Inc.

How to Read Braille Music Notation (Braille, audio tape, and discs). The Hadley School for the Blind, Inc., 700 Elm Street, Winnetka, Illinois 60093.

F – MUSIC PERIODICALS IN BRAILLE AND ON TAPES

Tapes are circulated by Regional Tape Lending Libraries.

Braille Musical Magazine, published by RNIB, London.

Braille Musician, The, published in Braille by the Division for the Blind and Physically Handicapped, Library of Congress (sent free of charge to the home).

Braille Piano Technician, published by Piano Technicians of Illinois.

High Fidelity – on tape.

Keyboard Junior, published in Braille by APH.

Overtones, published by the New York Lighthouse School of Music.

The Musical Quarterly - on tape.

Young Keyboard Junior, published in Braille by APH.

G - MUSIC ARTICLES IN CONNECTION WITH BLIND YOUTH

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IMPROVED TEACHING THROUGH THE USE OF THE VIDEOTAPERECORDER

Paul D. Rodabaugh
University of Missouri in Kansas City

The videotaperecorder has made a great and lasting impact in the field of education. "Despite great variation in complexity and special features, all of the devices that are currently called 'teaching machines' represent some form of variation on what can be called the tutorial or Socratic method of teaching" (Lumsdaine, 1960, p.5).

The following are essential features common to all forms of programmed instructions:

1. The learner is required to interact in some manner with the program.
2. The learner receives immediate feedback informing him of the corectness or incorrectness of his response.

During the fifties and sixties, B. F. Skinner was the most prominent figure in the use of advanced teaching devices. Skinner introduced via the field of teaching machines and programmed instruction his discoveries concerning operant behavior. He saw his machine not as a testing device, but as a device for teaching.

Programming, which includes the use of the videotaperecorder, is based on a conditioning model of learning. The desired change in behavior (learning) is brought about by inducing the learner to make the correct response and then reinforcing this response. Correct responses are the only responses which are encouraged and then reinforced. However, incorrect responses are noticed so that adjustments can be made in the program to ilicit the correct responses. The learner is reinforced by using correct responses on the videotaperecorder and by the mediating circumstances (instructor).

Progess In Teaching Aids

"The conductor must work for daily improvement, daily enlarging of experience. His way is a long one, and he must live in the fervent intention to be, at seventy, a much better conductor than he was at only sixty-nine!"

—Bruno Walter

This statement should be just as true of the educator who has the advanced technical tools of today to reinforce various methodolo-

gies of instruction. Every effort must be made to guide each student to a fuller, richer life through knowledge; and it is especially true of the music educator who has the opportunity to lead a student through profound aesthetic experience to meaningful self-actualization.

The music department of every school system should be concerned with improving instruction through a program which relates to the individual student. Though the administration and music supervisors officially set department policy, it is the music teacher who has the responsibility of making music come alive for every child. Everything a teacher does professionally must be underlined with the personal goal of self-evaluation and self-improvement. Not only should the music director evaluate his program, but his students should evaluate the music program in relation to themselves.

Teachers often tend to isolate themselves in their own stereotyped routines observing nothing. One of the greatest assets of conventions, festivals, and contests, is the pooling of experience and knowledge when the directors get together for discussions. By this same token, music educators should remain active in professional organizations, where, not only clinics, discussions and lectures are held for the enrichment of the teachers, but the amount of material in magazines and brochures cannot be measured in helpfulness to the individual teacher.[1]

The music teacher who takes advantage of all these facilities may still find they do not adequately fulfill the needs of the student. It is surprising how many facets of music which the director has tried to give the students and has not been successful, may be more understandable if approached from an entirely new perspective.

Since World War II the advance of electronics has put within the reach of all school systems some advanced tools, and to the affluent school systems a multitude of devices to help the teacher, and even more important, the student. Two of the least expensive and yet a must in any program, are the tape recorder and the phonograph. It is unimaginable to think of teaching music without being able to hear the great music organizations playing the finest music.[2] Also, all music programs, and especially those which include performing groups, receive many benefits from slide, movie, and overhead projectors. However, the benefit of hearing oneself is an immeasurable aid.

In the last fifteen years we have seen the advent of the video-

taperecorder and computorized learning.. The videotaperecorder, or VTR, has established a brief but meaningful one-to-one ratio between instructor and student. For the most part, the videotaperecorder has been used on a one-to-one student-teacher ratio. The outstanding feature of the VTR is that of immediate audio and visual feedback. The fidelity is excellent. It is as good as, or better than, motion picture film. In addition, no processing is necessary and the videotape, like sound recording tape, can be used more than once.[3] Many different groups have used VTR for various reasons, from news on television to coaches of various sports, using it as immediate feedback for their students. What a delight to a football coach to have a facility which enables him to have instant replay for every practice scrimmage play, as well as every game play. In this manner the coach and team still have the "feel" of the game with them when they watch the replay, rather than waiting a week for the game films to be processed.[4]

The VTR has been used well in the field of music in conducting classes, studio instrument pedagogy and student teaching.[5] In the conducting class, corrections could easily be made and seen for conducting patterns, cuing styles, techniques, stance, showmanship and stage presence.[6] The studio teacher has utilized VTR in teaching instrumental techniques which include embouchures, hand positions, posture, etc. Also, VTR has helped the student teacher by enabling him to check up on delivery methods, mannerisms and conducting techniques. The student teacher could focus in on the pupils to see if he is "getting thru" or if he is just marking time. In all these uses, the individuals get immediate feedback reinforcement from the VTR. (This allows all concerned to make an "on-the-spot" evaluation, which formerly might not have been possible.) All VTR tapes are made available to the students between classes.

Using VTR in all these various ways is fine; however, it still is not making it a tool for the individual who needs it most — the public school, and more specifically, the music director. For the public school teacher, here is another means of communication between himself and his students. Communication is effected by two forms of language. The first (non-verbal) is direct-representation.[7] It includes imitation, the mirror, direct stimulation of physical sensation, audio tape and videotaperecorder. The second form of language is indirect and includes words which stimulate to action, reason, thinking, etc.

In music it is clear that important sensory factors include visual, kinesthetic and auditory which interrelate.[8] If a student were to use

a mirror to play in front of, he would have both audio and visual images revealed to himself. The same would happen with VTR, with the addition, that in viewing himself on the VTR, the student will become more objective as if he were viewing someone else. Furthermore, when using VTR the student may concentrate on his music and later give his undivided attention to evaluation of the VTR.

Through the use of VTR the student can be introduced to the correct manner of developing a skill, especially a motor skill, through imitation. The student may view the teacher correcting the student, or he may view the teacher or an accomplished musician executing the skill correctly. Tied in with this type of instruction, the student may view the teacher corercting him, and thus he can watch the taping of the complete process of incorrect behavior, modification of behavior, and correct terminal behavior, all through immediate feedback.

Audio-tape devices have been recommended as a method for restructuring a school curriculum. A curriculum is revised, in many instances, simply by scrambling up the traditional structure of subject matter.[9] School administrators and teachers are operating under the illusion that if subject matter is structured, then it is difficult for the student not to otbain and retain knowledge (Bruner, 1960). Education must move ahead in what is to be taught and how it is to be taught. The videotaperecorder is a device by which educational material can be presented in such a manner as to attach and hold the attention of the student. Using VTR the student will be positively reinforced because his preparation and follow-through is not presented with punitive methods to force the students to study.[10]

Introducing VTR into the classroom is not going to solve the problems of the classroom or studio teacher. The instructor must prepare programmed material so that the student is successful with the material. Also, the student can cover successive tapes at his own pace.[11] The mistake of an inexperienced teacher is that he will attempt to substitute the VTR for the teacher. The videotaperecorder is an aid of the teacher whereby the student can add to a multiplicity of experiences and behavioral modification.[12]

In the following pages is briefly set forth the use of VTR as stimulus and reinforcement in behavioral modification.

Behavioral Modification Through Videotaperecorder

"One picture is worth one thousand words." Not the picture we may have of ourselves, but rather a "real" picture as others see us.

The videotaperecorder (VTR) affords just such a picture.

Videotaperecorders have been used in various capacities of the educational field for several years and as the cost becomes less prohibitive more systems will no doubt take advantage of it. As an aid to the football coach and marching band director, the VTR is a descendant of the 8 mm movie camera; but, unlike movies, the VTR does not need a week to ten day lapse for processing from the event to the viewing. Here we have the outstanding feature of VTR — immediate feedback. The videotaperecorder has been used in the field of music education for several years, but usually on a one camera to one person basis only, with the exception of the aforementioned marching band director. Therefore, the question arose as to the validity of the VTR as an aid to the teacher in a group situation with respect to behavioral modification through immediate feedback. Using immediate feedback as a reinforcement, the individual student may modify his own behavior with minimal assistance from the director.

The main consequences to the student is a positive reaction from the director. Though the student may not be aware of it, there are further consequences such as better sound, an increase in alertness to the music, and to the director, as well as a unity of the music produced by the group.

The group which helped with this project was the Indian Creek Junior High School Band, Shawnee Mission (Kansas) Public Schools. Psycho-motor skills, with which the group was having difficulty, were placed on an evaluation sheet (TABLE NO. 1) with a ten-point performance scale. As a reliability check, the teacher acted as sole judge, though the students were allowed to evaluate themselves and compare with the teacher. This procedure was found helpful because in many cases it was found that the students felt that they were responding in a specific manner, when in reality they were not. As an example, considering posture, it was noticed that some students had slouched for so long that even viewing themselves slumped over did not motivate them to modify their behavior. In such a case the teacher might physically straighten the individual, and having taped the incident, the individual gained not only an aural image reinforcement of himself, but also a definite kinesthetic reinforcement. Reliability checks also include data kept on a weekly basis for five weeks. Also, VTR tapes of all rehearsals have been kept.

To control the environment (stimulus control), the group met at the regular class time every day. Using music which was some-

what familiar to the students, it was thought that concentration could be centered on modification of the specific psycho-motor skills. In this case the group was kept to a schedule, which though planned daily, was flexible to the needs of the students. (See TABLE NO. 2, which includes the 1st, 2nd, 3rd, 4th, and 5th weeks)

The terminal behavior was the correct acquisition of certain psycho-motor skills which are important in playing music. Not all of the students responded within the five week project period, though some have modified behavior since the project ended. The teacher has been gratified greatly not by just the terminal behavior, but the change in attitude of many of the students who did respond to the behavioral modification project. Due to immediate feedback reinforcement as a result of using VTR, TABLE NO. 3 shows the behavioral modification of four individuals between the first and last week of the project.

"Music stirs the soul," but first, one must learn how to play and how to listen!

Applying the Videotaperecorder Program To the Rehearsal

To initiate this VTR project the concert band was divided at random with the only stipulation that if possible, a balanced instrumentation be maintained. Structuring the VTR into the regular rehearsal involves an understanding of the equipment and how to use it. The equipment is not very complicated, but it is advisable to have qualified personnel show the instructor how to operate the camera and recorder. With the exception of the camera, operating the videotaperecorder is slightly more complicated than a regular tape recorder. The camera involves learning to use the "Zoom" lens while maintaining the focus. For this reason it is ideal if another person can operate the equipment while the teacher continues with the rehearsal.

Using VTR in the rehearsal can be an asset if the teacher remembers that VTR will not do his job. VTR includes equipment which will help the teacher do the job. It was found that recording for a long period of time loses a lot of impact if everything recorded is viewed. However, best response was given when the VTR was used to record not in excess of ten minutes at one time and not more than twice in one rehearsal.

The cameraman must realize that it is better to record either the whole group or small groups at a time. The only instance during

the project when it was felt necessary to single out individuals, was to study the embouchure. When the group views the tape, no student should feel isolated.

Best results in taping are achieved by seating the band in a block pattern with a wide aisle on one long side of the room. The opposite aisle is taken by curving several chairs at an oblique angle. In this way, the camera, which is set on rollers along the wide aisle, can easily get a clear picture of each student in every row. Camera cables should be taped to the floor with masking tape, or taped together for easier handling and greater mobility. All the normal commotion of rehearsal is more intense due to extra personnel and additional equipment. Therefore, it takes several days before the students, though aware of the recorder and camera, begin to feel completely natural. (TABLE NO. 4)

Data Processing and Project Results

In this project the band director, Lelia Foote, acted as sole judge for the control group and the experimental group. There was a total of six evaluation psycho-motor skills over a period of five weeks.

On the evaluation sheet (TABLE NO. 1) there are six main headings with thirty-five specific categories. For the sake of processing, the categories were deleted to thirteen which include sitting, back, arms, feet. head, breathing, back expansion, cheeks, eyes, instrumental position and two categories on embouchure.

The evaluation tabulations were compiled on a master sheet. The data on the master sheet were transferred to computer memory banks at the Computer Assistance Instruction Lab, Bingham Junior High School, Kansas City, Missouri. Several types of statistics were gathered to realize the effectiveness of VTR. A program was set up that would produce a type of line graph which would show any progress in any category. Negative results were not considered.

Two more statistics were gathered which dealt with the means and standard deviation for each of the thirteen categories. The first program included all but the percussionists. Feeling that if everyone who started out with a point evaluation of eight or higher were eliminated in specific categories by introducing a number with which the computer refused to work, then those categories which had a positive result could easily be seen. In the test in which everyone was included there was only one category which had a significant standard deviation. The second test, while having only two categories with a significant standard deviation, did have a stronger positive result in all but one category. (TABLE NO. 5)

Performance Scale of Psycho-motor Skills in Music

Instructions:

a. Each behavior is to be rated.
b. The rating one (1) representing a poor performance, and ten (10) representing an excellent performance will be used.
c. Place a check mark under the number which most nearly describes execution of the behavior.

TABLE NO. 1

PSYCHO-MOTOR SKILLS	1	2	3	4	5	6	7	8	9	10
POSTURE:										
1. Sitting on front half of chair										
2. Back erect										
3. Arms (elbows) away from rib cage										
4. Foot flat on floor										
5. Heads up										
RHYTHM:										
1. Heel movement demonstrates the beat										
BREATHING:										
1. Mouth opens to inhale										
2. Back expands when inhaling										
3. Cheeks are not puffed while exhaling										
ALERTNESS:										
1. Eyes are up to watch the Conductor										

TABLE NO. 1 (continued)

PSYCH-MOTOR SKILLS	1	2	3	4	5	6	7	8	9	10
EMBOCHURE:										
Flute										
1. Firm chin										
2. Lower lip flat against teeth										
Clarinet and Saxophone										
1. Mouth in oval (whistle) formation										
2. Part of lower lip visible										
3. Firm chin										
Brass										
1. Lips in firm pucker										
2. Half of Embouchure includes lower lip										
PLAYING POSITION FOR INSTRUMENTS:										
Flute										
1. Held in horizontal position										
Clarinet										
1. Bell of instrument above knee										
Saxophone										
1. Held at side of body										

TABLE NO. 1 (continued)

PSYCHO-MOTOR SKILLS	1	2	3	4	5	6	7	8	9	10
Trumpet										
1. Lead pipe is in horizontal position										
2. Tips of fingers on valves										
French Horn										
1. Bell of horn rests on right knee										
2. Right hand is cupped										
3. Right hand rests inside bell										
Trombone										
1. Lead pipe is in horizontal position										
2. Left Index finger on lead pipe										
3. Right wrist flexible										
Baritone										
1. Tips of fingers on valves										
2. Left hand on outside tubing										
3. Bell tubing held at 75 to 80 degree angle										
Tuba										
1. Tips of fingers on valves										
2. Bell held at 75 to 80 degree angle										
Percussion										
1. Left wrist action										
2. High stick action										

MODIFICATION SCHEDULE

Table No. 2

FIRST WEEK

MONDAY
- Explanation of Procedure
- Rehearse:
- VTR
- Chorale: "Saviour of the Nations, Come."
- View VTR
- Self-Evaluation
- Continue Rehearsal

TUESDAY
- Warm Ups
- VTR
- Chorale: "Saviour of the Nations, Come."
- "Big Band Dixieland."
- View VTR
- Continue Rehearsal

WEDNESDAY
- Warm Ups
- VTR
- Chorale: "Deck Thyself, My Soul, With Gladness."
- "Marching To Pretoria"
- View VTR

THURSDAY
- Warm Ups
- VTR
- Chorale: "Saviour of the Nations, Come."
- View VTR - Point out corrections to be made.
- Re-tape
- "Marching To Pretoria"
- View VTR - Discussion
- Continue Rehearsal

FRIDAY
- Warm Ups
- Chorale: "Saviour of the Nations, Come."
- VTR
- "Fantasy On Chester"
- View VTR - Discussion
- Continue Rehearsal

SECOND WEEK

MONDAY
- Warm Ups
- Chorale: "Deck Thyself, My Soul, With Gladness."
- VTR
- "Occasional Suite"
- View VTR - Discussion
- Continue Rehearsal

TUESDAY
- Warm Ups
- VTR
- "Fantasy On Chester"
- Look at VTR - Discussion
- Re-tape
- "Great Gate of Kiev"
- View VTR
- Continue Rehearsal

WEDNESDAY
- Warm Ups
- VTR
- Chorale: "Saviour of the Nations, Come."
- "Fireworks Music"
- View VTR - Discussion
- Continue Rehearsal

THURSDAY
- Warm Ups
- VTR
- "Occasional Suite"
- View VTR - Discussion
- Re-tape
- "Basin Street Blues"
- View VTR - Discussion
- Re-tape
- "Cherish"
- View VTR - Discussion
- Continue Rehearsal

FRIDAY
- Warm Ups
- VTR
- "Fantasy On Chester"
- "Occasional Suite"
- "Fireworks Music"
- View VTR - Discussion (Two-week Summation).

THIRD WEEK

MONDAY
Warm Ups
Chorale: "Deck Thyself, My Soul, With Gladness."
"Great Gate of Kiev"
"Cherish"

TUESDAY
Warm Ups
VTR
"Fantasy On Chester"
"Raindrops Keep Falling On My Head"

WEDNESDAY
Warm Ups
Chorale: "Saviour of the Nations, Come."
View VTR
"Great Gate of Kiev"
"Basin Street Blues"

THURSDAY
Warm Ups
VTR
"Fantasy On Chester"
"Great Gate of Kiev"

FRIDAY
Warm Ups
View VTR
"Occasional Suite"
"Slavonic Dances"

FOURTH WEEK

MONDAY
Warm Ups
VTR
"Great Gate of Kiev"
"Little Suite for Band"

TUESDAY
Warm Ups
View VTR
"Proud Heritage March"
"Raindrops Keep Falling On My Head"

WEDNESDAY
Warm Ups
VTR
"Slavonic Dances"

THURSDAY
Warm Ups
View VTR
"Proud Heritage March"
"Slavonic Dances"

FRIDAY
Warm Ups
VTR
"Great Gate of Kiev"
"Cherish"

FIFTH WEEK

MONDAY
VTR
Warm Ups
"Occasional Suite"
View VTR - Discussion
Re-Tape
"Greensleeves"
View tape - Discussion
Continue Rehearsal

TUESDAY
VTR
"Occasional Suite"
View VTR - Discussion
Re-tape
"Marching To Pretoria"
View tape - Discussion
Re-tape
"Big Band Dixieland"
View VTR - Discussion
Continde Rehearsal

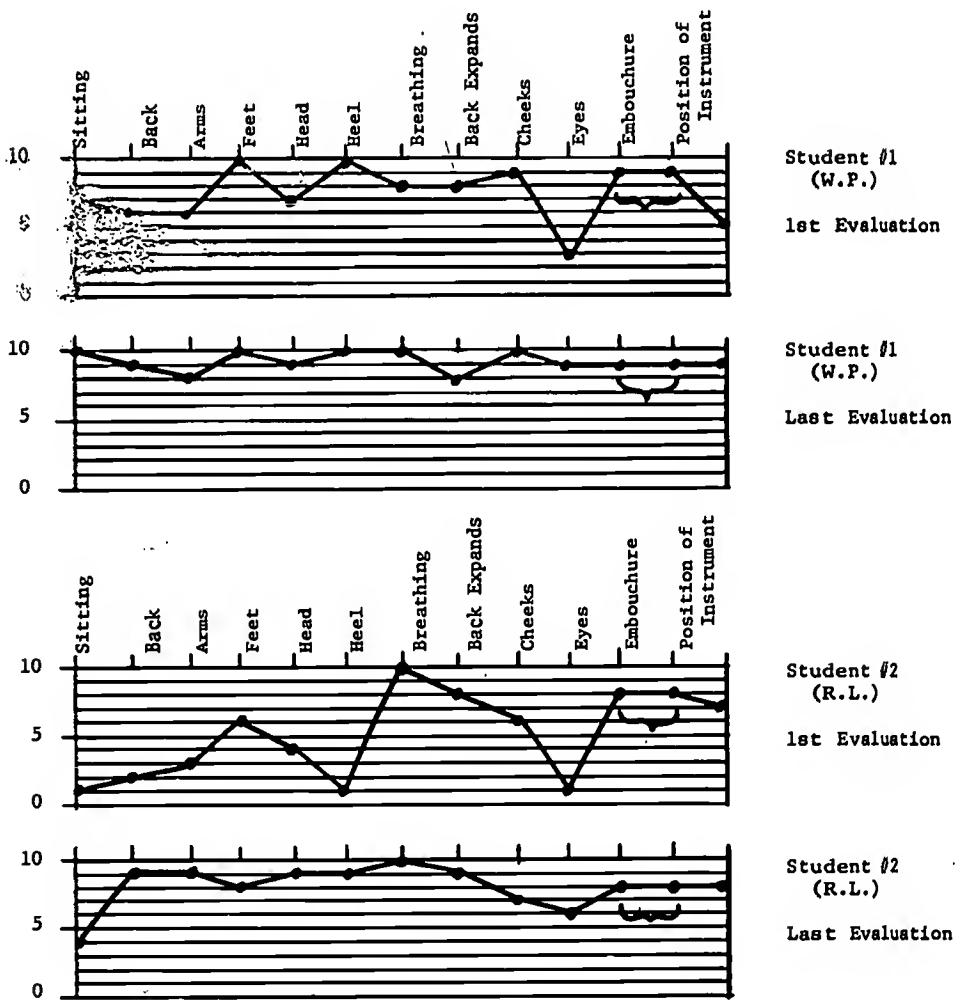
WEDNESDAY
VTR
Warm Ups
Chorale: "Saviour of the Nations, Come."
"Occasional Suite"
View VTR - Discussion
Re-tape
"Little Suite for Band"
View VTR - Discussion

THURSDAY
VTR
Warm Ups
"Raindrops Keep Falling On My Head"
"Occasional Suite"
View VTR - Discussion
Re-tape
"Little Suite for Band"

FRIDAY
VTR
Warm Ups
"All Thru The Night"
View VTR - Discussion
Re-tape
"Fireworks Music"
View VTR - Discussion
(Summation of Five Week Project)

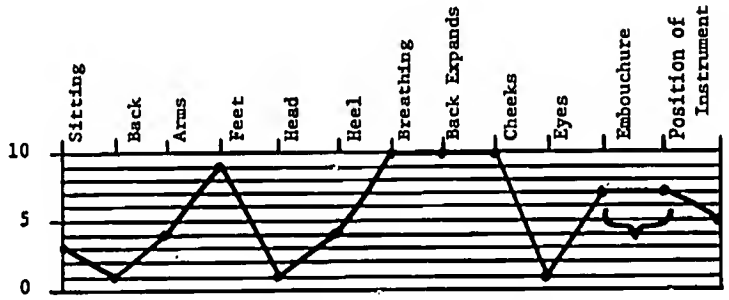
Behavioral Modification Results

TABLE NO. 3



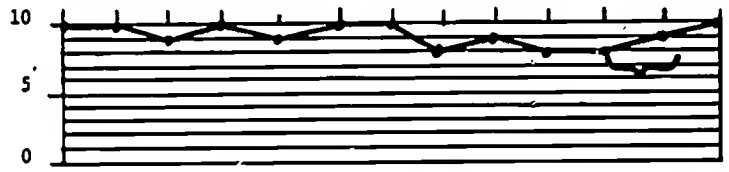
SCALE: 1-10; 1 being very poor, 10 being excellent.

TABLE NO. 3 (continued)



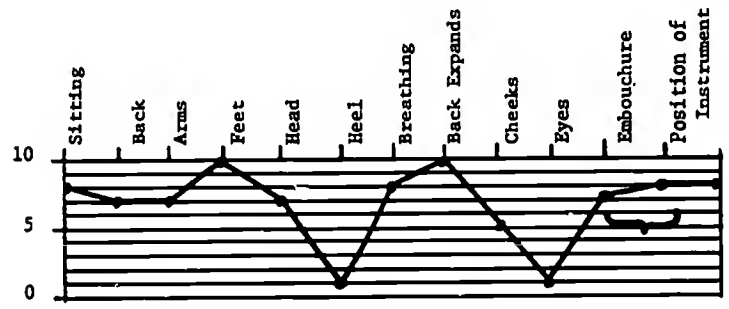
Student #3 (D.C.)

1st Evaluation



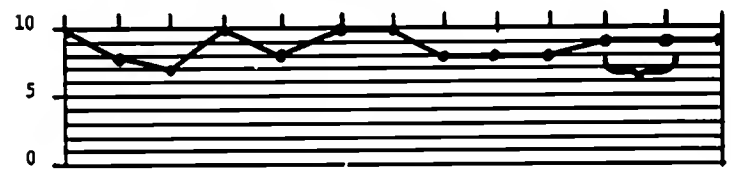
Student #3 (D.C.)

Last Evaluation



Student #4 (M.B.)

1st Evaluation

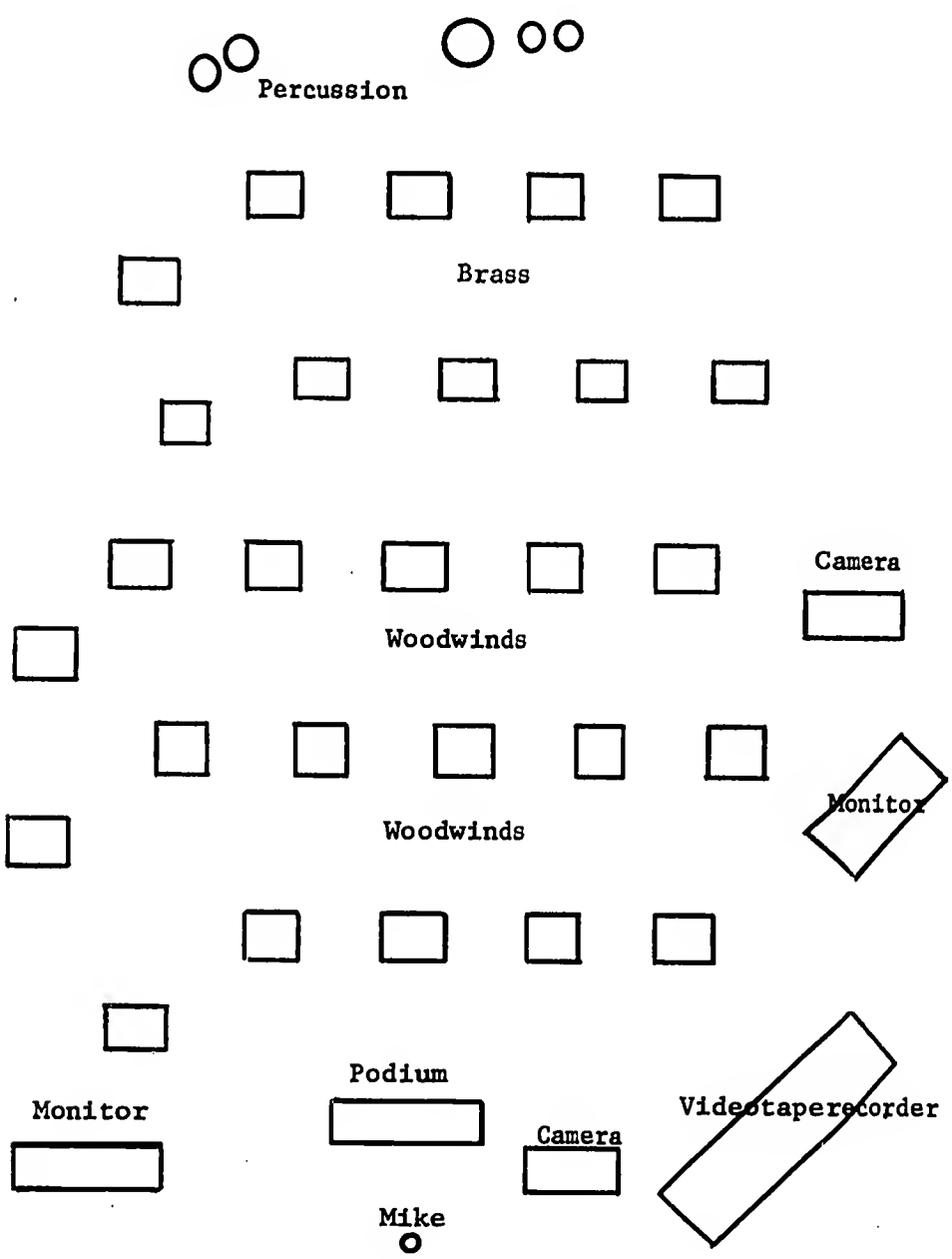


Student #4 (M.B.)

Last Evaluation

Classroom Arrangement

TABLE NO. 4



Statistics

Table No. 5

W - Control Group

V - Experimental Group

$\overline{X}$ - Means

Category One

W - $\overline{X}$ equals 1.78751
V - $\overline{X}$ equals 6.94444
Standard Deviation equals 3.77677
T value equals 1.36591

Category Two

W - $\overline{X}$ equals 2.05263
V - $\overline{X}$ equals 3.35714
Standard Deviation equals 3.57351
T value equals 0.36505

Category Three

W - $\overline{X}$ equals 3.4
V - $\overline{X}$ equals 3.0
Standard Deviation equals 3.64626
T value equals 0.109701

Category Four

W - $\overline{X}$ equals 2.0
V - $\overline{X}$ equals 5.18182
Standard Deviation equals 3.03315
T value equals 1.04901

Category Five

W - $\overline{X}$ equals 2.71429
V - $\overline{X}$ equals 3.125
Standard Deviation equals 3.02726
T value equals 0.135672

Category Six

W - $\overline{X}$ equals 2.53846
V - $\overline{X}$ equals 5.2
Standard Deviation equals 4.28871
T value equals 0.620592

Category Seven

W - $\overline{X}$ equals 1.57143
V - $\overline{X}$ equals 1.5
Standard Deviation equals 1.20515
T value equals 0.0592695

Category Eight

W - $\overline{X}$ equals 1.5
V - $\overline{X}$ equals 1.75
Standard Deviation equals 1.45488
T value equals 0.171836

Category Nine

W - $\overline{X}$ equals 1.64286
V - $\overline{X}$ equals 1.0
Standard Deviation equals 2.92488
T value equals 0.219789

Category Ten

W - $\overline{X}$ equals 4.71429
V - $\overline{X}$ equals 3.21429
Standard Deviation equals 3.93449
T value equals 0.381244

Category Eleven

W - $\overline{X}$ equals 2.25
V - $\overline{X}$ equals 1.5
Standard Deviation equals 3.3665
T value equals 0.222783

Category Twelve

W - $\overline{X}$ equals 1.5
V - $\overline{X}$ equals 1.88235
Standard Deviation equals 2.93433
T value equals 0.130303

Category Thirteen

W - $\overline{X}$ equals 2.95238
V - $\overline{X}$ equals 3.53333
Standard Deviation equals 4.04086
T value equals 0.143769

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Footnotes

1 Kenneth L. Neidig, **THE BAND DIRECTOR'S GUIDE** (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964), p. 189.

2 Peter W. Dykema and Karl W. Gehrkens, **THE TEACHING AND ADMINISTRATION OF HIGH SCHOOL MUSIC** (Boston: C. C. Birchard and Co., 1951), p. 432.

3 "Audio-Visual Guide," **THE INSTRUMENTALIST**, XXI (February, 1967), 30.

4 Larry Fisher, "Videotaperecorders," **THE INSTRUMENTALIST**, XXII (May, 1968), 32.

5 Otis Kitchen, "Videotaperecorders at Elizabethtown College," **THE INSTRUMENTALIST**, XXII (January, 1968), 24.

6 Charles Daellenbach, "Videotaperecorders at Eastman," **THE INSTRUMENTALIST**, XXI (May, 1967), 26.

7 Burton Kaplan, **A POINT OF VIEW OF VIOLIN TEACHING**: Toward the Creation of a Method of Methods. (New York City, New York: by the author, 1967), p. 25.

8 Ibid., p. 27.

9 B. F. Skinner, "Reflections on a Decade of Teaching Machines," **TEACHERS COLLEGE RECORD**, 1963, 171.

10 Ibid., p. 172.

11 B. F. Skinner, **THE TECHNOLOGY OF TEACHING** (New York: Appleton-Century-Crofts, 1968), p. 55.

12 Ibid., p. 6.

DEVELOPMENT OF A METHODOLOGY FOR TRANSCRIBING THE ORGAN MUSIC OF BACH FOR BAND

James M. Burk
University of Missouri - Columbia

Note: This paper constitutes the second chapter of a dissertation entitled "Band Transcriptions of the Organ Music of Johan Sebastian Bach: A Development of a methodology for transcribing, an appraisal of available transcriptions, and three model transcriptions" for the degree Doctor of Music Education. University of Oklahoma, 1967.

* * * *

In selecting criteria for the development of a methodology for transcribing Bach's organ music to the medium of the band, several considerations seem cogent. Foremost is the necessity of understanding some of the principles of organ registration. The color resources of organs vary as their sizes vary. A large organ will contain many ranks of pipes not included in smaller organs. The number of manuals, or keyboards, will vary also, and will determine the number of contrasting ranks or combinations of ranks which can be used at one time. To be sure, there are means by which the tone color can be changed within a piece and such changes can be made rapidly, too. But with additional manuals the organist can change colors more quickly and even leave the original color intact in case he would like to return to that color or even create an interplay between the two colors. Small organs usually have two manuals along with the pedal keyboard. Larger instruments have three, four, five, or more manuals. These manuals often control ranks of pipes which are placed in separate locations in the church or other structure.

Organ pipes are grouped together into ranks of pipes emitting the same tonal quality throughout the range of the keyboard. The organ uses a wind supply blowing through its pipes to produce the sound. In this respect, the organ is a wind keyboard instrument. The band is a wind instrument, too. The individual instruments making up the band or wind ensemble are not as diverse as the many shapes and sizes of pipes available to the organist. The wind source, too, is considerably different. The organ has an unlimited wind supply available mechanically. The wind players of the band must supply wind from their own lungs. Therefore, long lines cannot continue as endlessly in the band as when performed on the organ. Points for breathing and overlapping of breath points must be established.

Even though scoring for the full band has been frequent in the

past, many band arrangers have divided the band into woodwind, brass, and percussion choirs in more recent arrangements. This type of grouping could be equated with the ranks of the organ. Only two, or possibly three, tone colors are allowed by this division. The use of smaller divisions is necessary. The band or wind ensemble can be further divided, although some ranks, or choirs, would be incomplete at the upper or lower end of the range. The flute rank would sound the highest with the piccolo, flute, and alto flute forming its components. Even the addition of the bass flute would not allow this to be a rank with a complete treble and bass range. Besides, the bass flute is a rare instrument, and is used less often than the alto flute. The double reed rank is complete with oboes, alto oboe (English horn), bassoon, and contrabassoon. Many bands neither have access to an alto oboe or a contrabassoon, nor have a player with an instrument available. Just the oboes and bassoons form a complete rank with full range. The clarinet choir movement, or emphasis, has informed and encouraged band directors and arrangers to utilize the small E flat clarinet, alto clarinets, and contrabass clarinets in addition to the standard B flat soprano and bass clarinets. This family has the widest range of any in the band and is somewhat uniform in the tone color throughout the combined ranges. The saxophone family can be more complete with the addition of the soprano and bass to the usual quartet of 2 altos, tenor, and baritone saxophones.

The brass members of the band are more problematic because of the overlapping of timbres of the individual instruments. The soprano brass may be dark (flugelhorn), mellow (cornet), or bright (trumpet). This distinction is often very slight. The mid-range has the dark or mellow French horns and the brightness of the trombones and tenor trumpets. The bass register uses the tuba for dark sounds and the bass trombone for brighter hues. The baritone horn is a mellow bass or middle voice.

Instruments of the percussion section may be used in transcribing organ music for the band. Since they are not actually duplicating or even emulating a sound or rank from the organ, the percussion instruments must be chosen and used with the utmost care and discretion. The kettle drums can be used to sustain bass tones. The triangle or light cymbals might be used to heighten climaxes of a rather bright composition. Keyboard-mallet percussion instruments could possibly reinforce melodic lines, especially those which are of a brighter character and/or active rhythmically. The use of the snare drum and bass drum is more questionable and should be omitted from the score.

The instruments listed and described in the foregoing paragraphs are often found in bands. Those which are considered as unusual today are being used more and more and may become commonplace in the near future. The addition of small cornets and trumpets and tenor range instruments of the same categories will help fill out the brass choir into separate ranks of dark, mellow, and bright brass. It seems that the future of the wind band must rest with its development of full range, individual choirs, or ranks, of instruments.

It is not within the scope of this paper to discuss the different organ pipes, their resultant tone colors or their band or orchestral equivalent. Such information is available in numerous sources. Two aspects of organ registration are pertinent here. These will be discussed in the paragraphs which follow.

The first principle of organ registration which is applicable to transcribing for band is the use of octave doublings for coloristic purposes. The doubling of a melodic line in octaves, double octaves and the like is a widely used technique of both organ registration and orchestration. In the case of the organ, the performer doubles a line at the octave by choosing a pipe to couple with the present one. For example, the 8-foot pipe on the manual sounds in unison with the written pitch. Thus middle c ($\underline{c}'$) sounds middle c ($\underline{c}'$). The 4-foot pipe will sound an octave higher. Hence, $\underline{c}'$ written will sound $\underline{c}''$ when played on the 4-foot pipe. The 2-foot pipe sounds another octave higher, or two octaves above the written note. A written $\underline{c}'$ played on the 2-foot pipe will sound $\underline{c}'''$ ($\underline{c}^3$). The 1-foot pipe and ½-foot pipe will sound three and four octaves higher than the written pitch. In like manner, the 16-foot pipe will sound an octave lower than the notation. Written $\underline{c}'$ will sound $\underline{c}$ (the octave below middle $\underline{c}$). The 32-foot pipe sounds two octaves lower than the notation so that $\underline{c}'$ sounds $\underline{C}$.

By pulling the stops for the 8-foot pipe and the 4-foot pipe on a given rank and manual, both octaves will sound simultaneously by depressing a single key on the manual. Thus $\underline{c}'$ written for 8-foot and 4-foot pipes will sound $\underline{c}'$ and $\underline{c}''$ as a collective color. By combining 8-foot, 4-foot, and 2-foot pipes, one key will actuate three pipes and result in $\underline{c}'$, $\underline{c}''$ and $\underline{c}'''$ sounding synchronously. The principle applies to combinations of any lengths of pipes. This type of combining pipes allows the organist to play rich, full lines composed of two or more octaves while depressing only a single key at a time.

On the pedal keyboard, the written sound is produced on the 16-foot stop. Some sources, performers and instrument makers do not make a difference in pipe lengths for the manuals and the pedal

keyboard which are necessary to produce the unison. The 32-foot and 64-foot pipes sound an octave and a double octave lower, and the 8-foot, 4-foot, and 2-foot pipes sound the octave, double octave and triple octave higher, respectively. The doubling of the 16-foot and 32-foot pipes in the pedal is a common, accepted practice for the organist to use in any composition. The organ works of Bach are treated in this manner quite often, especially in the *doppic pedale* effect[1]. The Classical use of the violoncello and contrabass reading and playing from the same printed part exemplifies this principle orchestrally. The cello would be equivalent to the 16-foot stop and the bass would sound an octave lower as a 32-foot stop would.

In orchestration it is necessary to use two instruments to produce octave doubling, three instruments for doubling at the octave and double octave, and so on. Thus a flute and piccolo reading from the same music will produce notes an octave apart. This would be comparable to the 8-foot and 4-foot pipes of the manuals. A bass flute added to this would result in the octave below the flute sounding also, or the equivalent of the 16-foot, 8-foot, and 4-foot pipes sounded together.

The second principle of organ registration which serves as a basis for the present study is called *mutation* and its corollary, *mixture*. The term, mutation, comes from the Latin *mutare* which means to change. In the case of the organ, the change is that when a note is played, a different tone sounds. The change is not simply the octave doubling as described above. Rather, different letter names are involved. These tones are partials found in the harmonic series. Fractions are used to identify the lengths of these pipes. A 2 2/3 pipe is between the 4-foot and 2-foot pipes which are the octave and double octave above the written note as discussed above. The tone in the harmonic series between these tones is a twelfth (an octave and a fifth) above the fundamental. This is the tone which sounds for the 2 2/3-foot stop. Consequently, a 2 2/3-foot stop playing middle c (c′) actually sounds g″. This is called the "nastard" or "nasat." The 1 1/3-foot pipe sounds an octave higher than the 2 2/3-foot pipe. These are the mutation stops used most frequently. Two others are used fairly frequently also. The 1 3/5-foot pipe sounds two octaves and a major third (a seventeenth) above the fundamental. This stop is called the "tierce." To produce this tone an octave higher, the 4/5-foot pipe is employed. The 1 1/7-foot stop is sometimes used, but not nearly as frequently as those already described. The 1 1/7-foot stop sounds the seventh tone of the harmonic series, or two octaves and a minor seventh (flat 21st) above

the written note and/or pressed key. This stop is called the "septiemé." All of the above stops are rarely, if ever, used alone as it would result in the organ becoming a transposing instrument. Rather, these stops can be added to fundamental, or fundamental and octave pipes to establish tone qualities with increased "harmonic activity" or harmonic content by strengthening certain partials of the harmonic series. These combinations are quite effective as solo stops.

The corollary principle of *mixture* is based upon these mutation stops. A mutation stop is a single rank to be added to other stops. The mixture stop, on the other hand, is a pre-set combination utilizing the mutation stops with given fundamental and octave stops. Quite often the fundamental is omitted. Mixture stops involve from two to eight or more ranks of pipes. Mixture stops have "breaks" where the exact combination will change in its make-up. Gleason[2] supplies the reader with details of several standard and some sample mixture stops. The particular components of the mixture stops vary from instrument maker to instrument maker and even from instrument to instrument made by the same manufacturer. The acoustics of the room and the desires of the designer of the instrument are factors which determine the exact specifications of any organ.

In orchestration, composers and arrangers are most often content to use instruments for their single and collective colors without creating new colors by doubling at intervals other than the unison, octave or octave multiples. Mixture, as a principle of orchestration, is not known to be used. Scoring along the principles of mutation registration is found in two familiar compositions for orchestra. In Maurice Ravels' famous *tour de force* of orchestration, *Bolero*, there are two instances of what the present writer has chosen to call *mutation scoring*. There is one illustration of mutation scoring in Paul Hindemith's *Sinfonische Metamorphosen nach Themen von Carl Maria von Weber*. *Mutation scoring* is the technique of orchestration which is comparable to the use of mutation stops on the organ.

The first known examples of *mutation scoring* are found in the *Bolero* of 1928. Example One depicts the recurring melody scored by Ravel for solo French horn as the fundamental (8-foot stop), the celesta sounding the octave (14-foot) and double octave (2-foot), and the two piccolos supplying the twelfth (2 2/3-foot) and the seventeenth (1 3/5-foot). This type of orchestral usage continues from measure 149 through measure 165, completing the entire sixteen measure melody.

In measures 167 to 183, the melody is again presented by *mutation scoring*. Example Two shows the first four bars of this section of *Bolero*. Here the single and double reed instruments create the new sound. The alto oboe (English horn) and 2nd clarinet sound the fundamental (8-foot), the oboe d'amour sounds the octave (4-foot), and the 1st clarinet and oboe sound the twelfth (2 2/3-foot).

In measures 293ff., Ravel uses a close scoring of root, 3rd and 5th, each doubled at the octave, and the fundamental or root doubled at the fifteenth (double octave). This statement of the melody is scored in thirteen instrument parts. This could be labeled as mutation scoring, after a fashion, with the 8-foot and 4-foot not sounding. This tends more toward *mixture scoring* with the root here being equivalent to the 2-foot stop; its octave corresponds to the 1-foot pipe and the double octave would be like the 1 3/5-foot and 4/5-foot pipes of the organ. The fifth and its octave are similar to the 2 2/3-foot and 1 1/3-foot stops. Since the parallel scoring does not last for more than four measures before the parts begin separating from the combination, this example is not included here.

EXAMPLE ONE. See *Bolero* (1928) by Maurice Ravel
Measures 149-152 (to 165)

EXAMPLE TWO. See *Bolero* (1928) by Maurice Ravel
Measures 167-170 (to 183)

It should be pointed out at this time that these are definitely examples of *mutation scoring* for the resulting combined sounds create a sonority which emulates the organ combination made with mutation stops. When performed well in tune, the ear has difficulty detecting the separate elements or instruments making up the combined timbre. As in Gestalt psychology, the whole of the combination is greater than the sum of its parts. Heinz Becker[3] errs in his discussion of these examples from *Bolero* by stating that they are examples of polytonality. Ravel does use different key signatures, but only to facilitate the reading. The examples included herein are shown with the accidentals in order that the adjustments for the harmonic series of each tone can be readily seen by the reader. Becker errs again when he cites measures 293ff. as another example of polytonality. Not only does the parellelism cease after four measures, but Becker compounds his error by failing to transpose the part for the "Petite Trompette in Ré" to its sounding key. He calls it the polytonal key of B flat, which is the seventh when compared to the sounding C of the fundamental. When transposed, the trumpet in D sounds the C an octave higher than the fundamental.

The second familiar composition possessing an example of *mutation scoring* is *Sinfonische Metamorphosen* (1943) by Paul Hindemith. Measures 122 to 130 of the first movement are reduced in Example Three to show the voicing more readily than in the score. The clarinets and violas sound the fundamental while the 1st flute plays the nasard (twelfth) and the piccolo plays the tierce (seventeenth). This is equivalent to the combination of 8-foot, 2 2/3-foot, and 1 3/5-foot pipes.

EXAMPLE THREE: Paul Hindemith: SINFONISCHE METAMORPHOSEN (1943) Measures 122-130.

Mr. Spencer H. Norton, Research Professor of Music at The University of Oklahoma states that he has used *mutation scoring* in several of his orchestral compositions.[1]

Thus far, only the scoring of the colors of the organ to the palette of the band or wind ensemble have been discussed. Certainly, other matters are important factors in developing a methodology for transcribing Bach's organ music for band. These factors will now be considered.

With the techniques required of musicians today, it would seem unnecessary to transpose the key of any of the works. In the past,

flat keys have been favored by the players in bands and sharp keys by orchestral players. The difficulty of a band composition or arrangement was often determined by its distance from the concert keys of B flat or g. But today, compositions have become so highly chromatic in nature that familiarity with both flat and sharp keys is necessary. The teaching of both groups of keys occurs at an early stage of the player's musical education. It would appear unnecessary to transpose an organ work from a sharp key to a flat key for technical facility. The transposition due to factors of range of the instruments may still be required. But with the development of full ranks or choirs of instruments, this too seems unnecessary.

The altering of a measure signature and/or the rhythmic values is not required either. Many arrangements in the past have changed measure signatures so that the quarter note was the constant "beat note" or basic duration. This practice limited the performers' familiarity and ability with rhythm, and perpetuated making the same adjustments in other arrangements. This sort of circular cause-effect situation could only lead to further limitations. Demands made in more recent musical literature, including band literature, have helped to relieve this predicament — although it is far from being totally solved. By retaining note values, the transcriber is not required to make a decision for a change in the measure signature or the note values. Rather, the performer's cognizance of rhythm is widened and deepened to include the principle that any note value may be the "beat note" or basic duration, and that all other note values are in proportion to that basis. It would seem likely that more experience in this manner would result in a broader acquaintance and fuller understanding of the functions of rhythm. A part of the methodology for transcribing organ music — veritably any music — would be to retain the measure signature and note values of the original composition.

Closely related to rhythm is ornamentation. The use of ornaments is quite common in the organ music of J. S. Bach and must be considered very carefully in making a transcription for band. On the organ, one key manipulates all of the ranks coupled for that manual and thus the ornament will be consistent in all pipes making up the color. To achieve coupling in a band transcription, it is essential to use separate parts, instruments, and players. It is obligatory that all players have an interpretation of the ornament which is identical. This unanimity can be attained best by writing out the ornament in all parts. This gives assurance that all components of the timbre start on the same pitch, end on the same pitch, and perform identical pitches and rhythms between. This may cause prob-

lems in ensemble at first, but the end result of diligent rehearsals will be a higher degree of consistency among those making up the band ensemble color. This practice also aids the band director who is not certain of the stylistic interpretation of each ornament. Trills for only one instrument might not be necessary to write out.

In order to increase the familiarity of players and directors with the ornaments, it is suggested that the symbol for the ornament be included in the score and parts, about the written out interpolation of the ornament, and be placed in editorial brackets. This not only will bring familiarity but should diminish the reservations for having to perform complex looking rhythm-pitch patterns.

Often an orchestrator will develop new melodic lines, or "fillers," from the existing harmonies. This practice can be utilized as long as the new melodies do not detract from the composer's intent. The use of a part playing alternate notes, such as eighth notes in a sixteenth note passage, seems to create ensemble problems rather than simplify those already present. In an organ work which displays very stylistic keyboard writing this might prove to be a valuable technique. Skips or repeated notes within a melodic line are examples of this stylistic writing. The fugue subject of the renowned *Toccata and Fugue in d* [BWV 565] exemplifies this principle.

Tempo indications must be added by the transcriber since many of the Bach organ compositions do not have such markings. If metronome markings are to be given, there should be a range from slow to fast suggesting a suitable latitude for a tempo for that piece. Ritardandos may be added when standard performance practices connote such. Schoarly editions distinguished the editor's additions by placing the indication within brackets. This practice should be employed in all band transcriptions in order to separate the composer's instructions from the editor's interpretations.

This practice would hold true for expression marks also. The dynamics indicated in Bach's works are few and must be left up to the performer. Sometimes indications do offer hints as to how loud a part might be expected to be, such as signifying the portion of the organ to be used (e.g., "Oberwerk" and "Positiv" in the toccata of the *"Dorian Toccata and Fugue in d* [BWV 538]). Other dynamic markings should be shown in brackets identifying the transcriber's and/or editor's suggested relative weight for each part.

The written use of crescendo and diminuendo was not practiced in Bach's time. Changes in dynamcis occurred only by adding or deleting pipes to the registration in the case of the organ. Today this practice of changing registration in the midst of a Bach compo-

sition is not an accepted practice by those organists who seek stylistic authenticity. Perhaps this is due to the inabality to use the hand to manipulate the changing of stops on the organs of Bach's day rather than a true stylistic tent. It would seem proper to retain the voicing or registration throughout a chorale prelude. However, in a long fugue the addition of the 32-foot pipe in the last statement of the subject in the bass, and similar practices, are well within the scope of accepted procedures.

In a fugue, the organist usually registers each manual with a different timbre. The limitation of the two hands requires that all voices in a given staff (i.e., a given manual) be sounded with the same registration. Yet in a chorale prelude of three parts, each voice is performed on a separate manual for the express purpose of keeping the colors different among the voices. Consequently, if it were possible, it is assumed that each voice in a fugue, or other composition in a definite number of parts (as opposed to *freistimmigkeit*), would have differing registration for the individual voices. In the band, the instrumentation of a fugue should not use instruments in the same combination for each entry of the subject (or answer). For example, 3rd cornets doubled with 1st clarinets for the subject, and 3rd clarinets doubled with 1st cornets for the answer do not allow the two voices to have distinguishing tone colors. The duplication of the tone colors causes a "grey" lack of definition of voices. In organ registration, each line is registered with a distinguishing tone quality whenever possible. As this procedure can be followed more fully in band transcriptions to four, five, and even more parts along the lines of the choir or rank principle discussed earlier in this chapter, it would seem that this would be the more desirable plan to follow.

The manifold factors of transferring an organ composition from its original notation to a score for band have been considered here to develop a methodology for transcribing the organ music of J. S. Bach. Although the emphasis has been specifically upon Bach organ works, implications for other music can be found also — whether for organ or some other medium.

Footnotes

1 William L. Sumner, Bach's Organ Registration, Vol. II of School of Bach-Playing for the Organist, gen. ed. Gordon Phillips (London: Hinrichsen Edition Limited, 1961), 24.

2 Harold Gleason, Method of Organ Playing (New York: Appleton-Century-Crofts, Inc., 1962), 4-5.

3 Heinz Becker, History of Instrumentation, trans. by Robert Kolben, Vol. XXIV of Anthology of Music, ed. K. G. Fellerer (Köln: Arno Volk Verlag, 1964), 32 and 109-110.

4 Private conversation with the author, December, 1966.

HUMANITIES, INTEGRATED ARTS, AND AESTHETIC EDUCATION

William D. Gaver
University of Missouri-Kansas City

Note: The following paper is abridged from Chapters One and Two of a dissertation by William D. Gaver written in partial fulfillment of the requrements for the degree Doctor of Musical Arts at the University of Missouri in Kansas City, 1971.

Description of the Problem

The mid-twentieth century has noted a curriculum reform movement in many areas of academia. In music education at both the elementary and secondary levels, there is a growing conviction that the school music curriculum is in urgent need of reform. This view wants music education to change, to re-examine its aims, purposes, objectives, and methods in order that music may become an integral part of aesthetic education.[1]

A trend representative of this view can be found in programs that juxtapose several, many, or all the arts in units of instruction to demonstrate that the arts are potential sources of aesthetic experience. As R. Murray Schafer, the gifted Canadian composer and creative teacher has pointed out, interdisciplinary programs of study are vital and desirable in order that music [and the related arts] may be forced out of the isolated and departmentalized restraints in which educators so effectively placed them many years ago.[2]

A cursory view of the contemporary arts would affirm that many of today's creative artists are no longer limited to specific categories. Instead, the innovative artist is seeking avenues that link the aural and visual continuum which abrogates spatial versus temporal art. Furthermore, recent efforts and studies by Gerard Knieter[3] of Temple University and Paul Haack[4] of the University of Kansas, as well as others, provide some evidence that a multi-media presentation of the arts enhances significantly the development of aural perception and an understanding of music and the related arts within students. Yet, as aesthetic education, the integrated arts curricula can stimulate and identify with an even greater responsibility — the contributing to basic human needs.[5] As such, the course is designed to: (1) foster aesthetic sensitivity and understanding, (2) to develop and refine sensory perception, (3) to encourage individual creativity, (4) to actualize human potential through the functional use of sensory inputs, (5) to focus on uniqueness of individual expression, (6) to encourage a more affirmative understanding

and relationship with mankind, and (7) to develop interlockng cooperative and collaborative skills in order that the student may function more realistically and effectively in a changing environment. Therefore, many integrated arts endeavors attempt to reflect the following attributes:[6]

1. To discover and study the basic components of the arts.

2. To develop an awareness of the role of the arts within a culture based on the values and achievements of the past and the present with an examinaton of possible future artistic trends.

3. To make the curriculum offerings more relevant to student needs and desires.

4. To develop basic skills in non-verbal communication and psycho-motor skills.

5. To develop self-actualization and to broaden individual freedom by granting greater responsibility to the individual student with opportunities to explore space and time relationships.

6. To assist the student to adjust and adapt in a viable world community.

This fusion of the arts, therefore, is an attempt to develop a more effective and balanced course of study to foster aesthetic sensitivity and understanding, social conscience, and the emancipation of human potential.

Purpose of the Study

As curriculum reforms became more rigorous during the 1950's and 1960's, music education, i.e., the *Music Educators Journal,* the Yale Seminar on Music Education, and the Tanglewood Symposium, to name a few, began to question the role of music in the schools and its relationship to society. The American Council of Learned Societies stated in its 1958 *Newsletter,* "Secondary School Curriculum Problems," a series of specific weaknesses existing in our high school music programs:

> 1. Too often the high school music program consist[s] of band, orchestra, and chorus, enrolling only students with musical aptitude and talent.
>
> 2. . . . tendency to overstress certain activities of questionable musical value . . . marching band . . . needed to be de-emphasized and placed in the category of an extracurricular activity . . . also question the value of competitive festivals.
>
> 3. . . . little opportunity is provided for the 20 to 80 per cent of the student body who may not be interested in musical performance, but who are all potential consumers of music.

4. . . . need for more emphasis on development of musical skills and less teaching by rote.[7]

Leon Karel emphasized the need for curriculum reform in music education by voicing the following school arts program defects:

1. The arts are divided and compartmentalized to the point where they are almost total strangers to one another.

2. The arts teach performers. Non-performers find little or no opportunity for arts experience.

3. The arts, particularly music, exploit students. The student serves the musical organization when it should serve him.

4. The arts as an entertainment feature of the curriculum are governed by "what the people want."

5. The arts fail to challenge the best in the student. Music education is dependent on patterns established many decades ago. Failure to hold students in the music curriculum documents the failure to meet student needs.[8]

Frequently, references such as Jipson's "The Other Eighty-five Percent"[9] allude to the 80 to 85 percent of the American secondary school population who are reportedly not enrolled in the performance-oriented curriculum. An analysis of this factor could pose the statement that perhaps this portion of the secondary school population is not interested in performance. This, in turn, suggests a question: Is music education not committed to music and the related arts as a way of life? As Bennett Reimer relates, music education has failed to solidify its position about the fundamental nature of music.[10] To alleviate this singular approach (performance) to music, music and the related arts in striving for a more pertinent and well-rounded arts curriculum, have been increasingly motivated toward an integrated arts concept of education which provides aesthetic experiences for the non-performer as well as the performer. Harold Taylor has observed:

> This means the engagement of students in the practice of the arts themselves and the confrontation of students with genuine issues involving genuine intellectual, moral, and aesthetic options. The student must face the fact it is he who must decide the character and quality of his own response to an object of art; it is he who must judge the worth of an idea within a framework of his own values, a framework he must learn to construct for himself.[11]

Yet, a review of the current structure of music education in the schools has led the Manhattanville Music Curriculum Program to raise this thought-provoking question:

> Have you ever considered that most students never have the chance to exercise musical or artistic judgment in the classroom.[12]

In view of these developments, this study was undertaken to communicate a perspective of the integrated arts in American secondary education.

Definition of Terms

Aesthetic education is the examining of the relationship of the arts to the human intellect and senses. It is the process that enables man to develop his capacity for expression in the arts (creating, performing, and/or responding) thereby cultivating aesthetic sensitivity — the capacity to respond to the emotional and cognitive meanings of organized design.[13]

Humanities are verbally-based in the fields of English, history, ethical, and social and moral values.

Integrated arts, commonly called Allied Arts or Related Arts, are identified as the correlation of non-verbally based subject matter or experiences which are aesthetically-oriented, e.g., music, painting, sculpture, architecture, and dance. In Missouri, the integrated arts concept is generally known as the Allied Arts.

Humanities, Integrated Arts, and Aesthetic Education — A Delineation

In the investigation of the status of the integrated arts in secondary schools of Missouri, it became abundantly clear that courses entitled "Humanities" and "Allied Arts" failed to specifically identify inherent characteristics that are unique to each. In addition, educational philosophy has neglected to precisely define those factors that distinguish the "humanities" concept from the "integrated arts-allied arts-related arts" approach. Therefore, the following is designed to delineate the precise nature and variations of a humanities versus an integrated arts course of study.

Education is the changing of behavior selectively. As Knieter suggests, the responsibility of music and related arts education lies in the area of aesthetic behavior for the development of aesthetic sensitivity is unique to the arts.[14] In addition, Reimer offers seven major behavioral categories relevant to the arts and aesthetic education: (1) perceiving, (2) reacting, (3) producing, (4) conceptualizing, (5) analyzing, (6) evaluating, and (7) valuing.[15] Aesthetic encounters may be experienced in many diverse ways. For example:

1. Responding to aesthetic qualities in objects or events by means of *reading,* e.g., poetry; *listening,* e.g., music; and/or *viewing,* e.g., painting.

2. Producing objects or events which contain aesthetic qualities by means of *composing/creating,* e.g., music, poetry, painting, and/or *performing,* e.g., music, dance.[16]

Reimer reminds us that "one cannot become more aesthetically sensitive to sounds, to colors, to shapes, to movements, to verbal images, to spaces, to actions."[17] Therefore, aesthetic education is the development of the human intellect and senses within the arts. According to Karel, it was not until the 1960's that education began to consider this important obligation — the cultivation of skills necessary for aestetic awareness.[18]

Knieter has condensed the philosophical and psychological data relating to the aesthetic experience into five intrinsic categories:

1. *Focus.* This element is directional and attentional. It requires that the individual must have a psychological encounter with the aesthetic object, e.g., painting or music. The experience must be more than vicarious exposure.

2. *Perception.* The process in which data from the senses are utilized. Aesthetic education deals with the cultivation of perception —the organizing of space perceptually. The visual and auditory senses must understand patterns and relationships.

3. *Affect.* This factor refers to feeling. Aesthetic experience requires the individual to move from predisposition to a profound emotional encounter.

4. *Intellect.* This process is applicable to cognition. It is a factor that is often overlooked, for arts education has erroneously assumed that understanding is dependent on extensive psycho-motor skills.[19]

5. *Cultural.* Arts are not absolutes aesthetically; they are culturally-based. The perceiver must recognize that the artistic outgrowths of one culture may not and generally do not share an identical aesthetic base with another culture.[20]

Thus, it may be stated that the collaboration of these five factors into a systematic educational process should significantly enhance achieving the following:

> The general goal for aesthetic education is to cause the student to increase his capacities to experience aesthetic qualities in man-made and natural objects and events in his environment.[21]

As Nye suggests, contemporary education operates in three domains" — the affective, the psycho-motor, and the cognitive.[22] The arts possess a compatible relationship with all three areas, but education has neglected to commit itself to the affective element — that which is most directly related to aesthetic education.

> Because it is apparently easier to transmit the cognitive, the schools have not appreciably increased their effectiveness in consciously influencing the effective aspects of the lives of students. Music education [and the related arts are] . . . possible means of reaching students and of adding a dimension to their lives. However, to do so effectively involves reaching the entire being of the student and not simply his cognitive faculties. The student must *feel* as well as think.[23]

Furthermore:

> In education of this nature children not only learn to feel but also to understand why and what it is they feel. Educators must accept the responsible role of teaching how to think about art, not what to think; . . . [24]

Affective development, therefore, is the process identified with feeling.[25] To develop cognitive skills alone fails to sharpen the students' faculties so essential to the nourishing of active, thoughtful and creative ways for coping with a complex environment.[26] Huw Morris-Jones expresses another critical view when he states:

> In a cognate way different art-forms are also specialized "languages;" that is, they also reflect culturally determined ways of thinking and feeling limited by the expressive scope of the symbolic media they use . . . Musical feelings are different from sculpture feelings.[27]

Therefore, the nature of music and the related arts experience may be categorized as an experience of feelings.

> The major function of aesthetic education is to make accessible the insights into human feelingfulness contained in the aesthetic qualities of things. Aesthetic education, then, can be regarded as the education of feeling.[28]

The significance of the integrated arts concept is the realization that its potentialities contribute to aesthetic education; the cultivation of another dimension within the school curriculum congruent with aspects of "feeling" as it relates to personality and learning. It is this central factor of "feeling" that nullifies the humanities approach as an adjunct to aesthetic education. As currently structured, the humanities fail to embrace this form of inquiry ("feeling"), and as such, suffer a dearth of aesthetic endeavors. Fundamentally, "art history" and "arts and humanities" courses remain as history and humanities, and fail to develop in students an understanding of the affective nature of art works.[29] Furthermore, the humanities concept tends to:

> . . . subvert the aesthetic aspects of the arts because they

> treat the arts in broad categories which fail to capture the particulars on which aesthetic experience depends. Frequently, the arts are reduced to illustrating moral issues and dilemmas of life, or giving factual information.[30]

Guidelines: Curriculum Development for Aesthetic Education offers additional analysis of the humanities curricula:

> The humanities are concerned with ethical problems. In humanities programs, the arts tend to be used as data to examine values that motivate human conduct. Ideas about these values take precedence over the influence of media and forms on man's aesthetic experiences . . . The humanities teach ways that problems and ideas about life can be perceived and imagined. Aesthetic education shows how such problems and ideas can be experienced, expressed, enjoyed, or made tolerable.[31]

In evaluating the effectiveness of the humanities approach versus the integrated arts concepts as it relates to aesthetic education, Jorgenson suggests that the integrated or related arts presentation is more practical

> . . . with its limited objectives of relating principles, concepts, and critical judgments in the application of the senses to both artistic perception and the solution of contemporary aesthetic problems.[32]

The complexity of the humanities and the integrated arts concept can be unraveled by reviewing the outcomes of an investigation of the humanities movement in education. This study pointed to five influences regarding the humanities in secondary education: (1) The Commission of the Humanities, (2) The John Hay Fellows program, (3) the *English Journal,* (4) the United States Office of Education, and (5) Encyclopedia Britannica Films. Two primary purposes of humanities programs were said to be the transmittal of cultural heritage and the humanization of the individual. The objectives of the transmittal of cultural heritage were characterized as: (1) valuing knowledge for its own sake, (2) mastery of intellectual disciplines, and (3) need for knowing about great men and ideas of the past. Objectives relating to the purpose regarding the humanization of the individual were categorized as: (1) need for the process of becoming, (2) discovery of personal identity, (3) opportunity for students to engage in self direction, (4) need for problematic learning, and (5) unity of knowledge.[33]

Thus, this educational trend becomes a historical and philosophical approach arising from the study of ideas, theories, and principles. The curricula structure becomes a platform for the dissemi-

nation of accumulated predetermined facts. As Karel has stated, the humanities incorporates the arts in historical eras for the illumination of man's heritage, his great ideas, and achievements.[34] As such, it dispenses *knowledge about* art and *does not* present the arts in a manner conducive to *experiencing* art.[35] Using art works as indicators of cultural mores, attitudes, and fashions, is readily acceptable within history and social science classes, but this cannot be construed as a factor in aesthetic education.[36] Broudy contends that:

> In aesthetic experience we perceive objects in order to grasp their sensuous characteristics and not *primarily* to further knowledge or useful enterprises. Aesthetic activity may accompany practical, moral, religious, intellectual, and social activity and enhance our enjoyment of them, but it is not to be confused with them.[37]

Schwadron provides additional insight:

> In painting, the virtual boundaries of [aesthetic] experience are marked by spatial limitations; in music, by temporal. As such, aesthetic experience is of importance for its own sake rather than the functional — social, moral, or political — purposes.[38]

Furthermore, Schwadron suggests that arts as "functional purposes are often aesthetically questionable."[39]

The structure of the course of study within the humanities generally relies on three basic approaches: (1) thematic or topical, (2) chronological or historical, and (3) unifying element approach. Wenner senses a number of cautions regarding a course of study that is committed to such a regimented presentation:

1. Art chosen to illustrate a theme such as love, hate, or war provides the student with no opportunity to experience or discover for himself; rather the student is "told" the contents of an art work.

2. Art selected to reflect a period in history is so chosen to "prove" superficial factual knowledge, thereby sacrificing aesthetic sensitivity. Furthermore, "art that does not express a particular period is excluded."

3. The presentation of elements that supposedly unify or are common to the arts, i.e., line, rhythm, structure negates the opportunity of exposing the student to those factors which are unique in each of the arts.[40]

Jorgenson stipulates a serious reservation relative to the humanities approach as it relates to aesthetic education when he states:

> The humanities courses — particularly the historically oriented course — usually assumes that the student will

> learn to make critical judgments in his own life from contact with historical masterpieces. This calls upon a philosophy of history that depends upon *transfer* and that few social scientists or historians will attempt to defend any longer.[41]

The purpose of this study is not to draw conclusions regarding the pros and cons of the humanities. It is important, however, that the true nature of the aesthetic content found in courses be exposed, and to determine whether or not these courses are committed toward educating a general audience in the affective role of the arts. A weekly newsletter, *Education U.S.A.,* recently offered a perceptive view of what humanities authorities defined as a new movement to replace the humanities of the 1960's. Allan A. Glatthorn, chairman of the Association for Supervision and Curriculum Development (ASCD) Commission on the Humanities, and principal of the Abington, Pennsylvania High School, remarked at the 1971 ASCD annual convention in St. Louis that humanities courses relying on lectures, films, and large group instruction are "the same old content in a different package."[42]

> Short-term elective courses in English, social studies, and other areas may make humanities courses redundant . . . In some schools the program of English electives is already undermining humanities courses for the same teachers are often involved in both programs.[43]

A new trend, affective education — focusing on feelings, values, emotions, and self-awareness will dislodge or reshape humanities offerings. The focus of the 1970's is directed toward humanizing the entire curriculum, rather than offering humanities courses.[44] Signs of change are already appearing: (1) more emphasis on films as an art form, (2) more attention to "third world" or minority cultures, (3) increasing efforts to focus on the present, not the past, (4) courses designed for all students, not just the college-bound, (5) students and teachers alike working collectively to create courses, and (6) replacing team-teacher-developed and book-oriented courses.[45] These changes reflect what Postman and Weingartner state:

> . . . the thrust of the "curriculum" . . . is to extend the child's perception of what is relevant and what is not.[46]

Gene C. Wenner provides an astute perspective in summation of the discussion supra:

> Humanities courses force art to conform to thematic, historical, or structural molds. Art that does not conform is ignored. Related arts courses, on the other hand, focus

on the art works themselves, chosen on their merit alone. Since the art is not being used to illustrate a theme or historical movement, the students are freed to concentrate on understanding their response to art.[47]

Most humanities courses are designed for the academically talented student, . . . As a result, humanities courses are usually verbally oriented and usually a "read-about" and "write-about" approach . . .

The related arts or allied arts courses, on the other hand, are generally directed toward all students regardless of their academic or artistic background, that is, the eighty percent referred to at the Tanglewood Symposium.[48]

Finally, the differences encountered in developing an imaginative curriculum responsive to the cultivation of aesthetic sensitivity is no easy task and should not be minimized. If the curriculum

> . . . leans too heavily toward concept instruction then the skills developed are more the manipulation of concepts and it will probably lead more to the development of professional critics; if skill oriented, then it will more than likely become a program for developing artists; if only experiential then it would probably be more therapeutic than educational. The problem . . . is to maintain a balance of . . . concepts, skills, or experiences both as means and ends.[49]

Summary

Aesthetic education exemplifies the common bond shared by the individual fine art disciplines found in American education — the cultivation and development of the aesthetic experience and response, "feelingfulness," as it relates to the student's intellect and senses. From a point of view derived from the latter half of the twentieth century, the arts, unlike the humanities, are not social, ethical, or moral — they are aesthetic. The thrust, therefore, of aesthetic education is unique in that knowledge gained through aesthetic experience is characteristically nonverbal and personal. It is the development and understanding within man of the affective response toward aestheteic objects for which aesthetic education is ultimately responsible.

A fusion of the arts into a singular course of study has resulted due to a redefining and broadening of the role of the arts at all levels of education. This integrated arts approach is an effort to improve the potential of the arts in education, and to develop within the student increased sensitivity to, understanding of, and competence in aesthetic experiences.

FOOTNOTES

1 For three recent publications that dramatize this concept see Bennett Reimer, A Philosophy of Music Education (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1970); Abraham A. Schwadron, Aesthetics: Dimensions for Music Education (Washington, D.C.: Music Educators National Conference, 1967) and Toward an Aesthetic Education, Report of an institute sponsored by CEMREL, Inc., Bennett Reimer, chairman (Washington, D.C.: Music Educators National Conference, 1971).

2 R. Murray Schafer, Ear Cleaning (Don Mills, Ontario: BMI Canada Limited, 1967), p. 2.

3 Gerard L. Knieter, "The Creative Arts Symposium," Music Educators Journal, XLIX (April-May, 1963), 62, 65-66.

4 Paul Haack, "A Study involving the Visual Arts in the Development of Musical Concepts," Journal of Research in Music Education, XVIII (Winter, 1970), 392-398.

5 Abraham H. Maslow, "Music, Education, and Peak Experiences," Music in American Society, Documentary Report of Tanglewood Symposium (Washington, D.C.: Music Educators National Conference, 1968), pp. 71-73.

6 For an illuminating discussion of the problems encountered in curriculum goals and objectives of this nature see David W. Ecker, "How to Think in Other Categories: The Problem of Alternative Conceptions of Aesthetic Education," The Journal of Aesthetic Education, IV (April, 1970), 21-36.

7 Earl V. Moore, "Report of Music Panel" in "Secondary School Curriculum Problems," American Council of Learned Societies Newsletter, IX (Fall, 1958), 17.

8 Leon Karel, "Teacher Education in the Related Arts," Music Educators Journal, LIII (October, 1966), 38-39.

9 Wayne R. Jipson, "The Other Eighty-five Percent," Music Educators Journal, LV (January, 1969), 35-36.

10 Bennett Reimer, "Curriculum Reform and the Junior High General Music Class," Music Educators Journal, LIII (October, 1966), 43.

11 Harold Taylor, "The Arts and the Humanities," The Humanities in the Schools, edited by Harold Taylor (New York: Citation Press, 1968), 22-23.

12 Funded by the United States Office of Education, the Manhattanville Music Curriculum Program is directed by Ronald B. Thomas, Manhattanville College, Purchase, N.Y.

13 The author wishes to credit Dr. Gerard L. Knieter, Chairman of the Department of Music Education of Temple University, for having influenced this definition.

14 Gerard L. Knieter, "Foundations of Aesthetic Education," (Lecture-demonstration presented to the Massachusetts Music Educators Association Conference, Plymouth, Mass., March 28, 1969).

15 Bennett Reimer, A Philosophy of Music Education (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1970), p. 154.

16 Manuel Barkan, Laura H. Chapman, and Evan J. Kern, Guidelines: Curriculum Development for Aesthetic Education (St. Charles, Mo.: Central Midwestern Regional Educational Laboratory, Inc., 1970), p. 10.

17 Reimer, op. cit., p. 143.

18 Leon C. Karel, "Allied Arts: An Approach to Aesthetic Education," The Journal of Aesthetic Education, I (Autumn, 1966), 111.

19 "To realize the aims of general education in music (and the related arts), we cannot rely upon instruction in performance skills per se as a means to full understanding of musical (and arts) content. To teach sensitivity to aesthetic content, we must rely upon other educational experiences than those of performance. Whatever the values of musical (or artistic) performance might be, we must recognize that performance is not a primary means to development of aesthetic sensitivity." Foster McMurray, "Pragmatism in Music Education," Basic Concepts in Music Education, Fifty-seventh Yearbook of the National Society for the Study of Education, ed. by Nelson B. Henry (Chicago: The University of Chicago Press, 1958), pp. 46-47.

20 Gerard L. Knieter, "The Nature of Aesthetic Education," Toward an Aesthetic Education (Washington, D.C.: Music Educators National Conference, 1971), pp. 3-6.

21 Barkan, Chapman, and Kern, op. cit., p. 12.

22 Robert Nye and Vernice Nye, Music in the Elementary School (3rd ed.; Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1970), p. 3.

23 Carl J. Dolce, "School Administrators," Music Educators Journal, LVI (January, 1970), 63.

24 Abraham A. Schwadron, "Structural Meaning and Music Education," The Journal of Aesthetic Education, III (October, 1969), 121.

25 For an exposition of the theories of "feeling and emotion" as they relate to visual and auditory perception see Ronald W. Hepburn, "Emotions and Emotional Qualities"; Huw Morris-Jones, "The Language of Feelings"; and Harold Osborne, "The Quality of Feeling in Arts," Aesthetics in the Modern World, ed. by Harold Osborne (New York: Weybright and Talley, Inc., 1968). Another excellent reading is Chapter Three, "Art and Feeling," of Bennett Reimer's, A Philosophy of Music Education (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1970).

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DISSERTATION ABSTRACTS

ABSTRACT

A BASIC METHOD OF GROUP INSTRUCTION FOR BEGINNING CHURCH ORGANISTS

Sister Dorothy Venhouse (S.S.N.D.) Ed.D., 1971
Washington University

The main objective of this paper is the development of a method of group instruction for beginning church organists. It presents an attempt to fill the need for materials and procedures which can be used to help future organists gain proper skills and abilities in order to develop the musicianship and discrimination necessary for proper fulfillment of music as a functional aid to worship.

The pertinent psychological learning and instructional theories of Bruner and Woodruff are examined. Bruner's four main themes of structure, readiness, intuition, and interest are applied in the construction of this method. A spiral curriculum based on the structural dimensions of music (pitch, duration, timbre, loudness, simultaniety, form, and style) is developed in six cycles. These dimensions are analyzed in the music which is presented for study, with each cycle containing representative pieces from each of the historical stylistic periods.

Woodruff's instructional theories are adapted in the separation of musical concepts and skills into verbal and non-verbal objectives. The planning and stating of objectives and strategies for each cycle is presented in behavioral terms according to the type of response expected.

It is hoped that the group method presented will enable the student to perform skillfully and in good taste; to understand the prin-

ciples of good organ technique and appropriate registration; to become aware of the literature available in the various stylistic periods through a variety of musical compositions; and to learn the essentials of music and music's development as an art so that his powers of musical discrimination in choice and interpretation of literature may be improved.

ABSTRACT

AN INVESTIGATION OF THE VIBRATING CLARINET REED UTILIZING HIGH SPEED CINEMATOGRAPHY

Roger Dean Coppenbarger, D.M.A.
University of Missouri at Kansas City, 1970

Problem

The goal of this project was to investigate the behavior of a vibrating clarinet reed. Not only a tone in a steady state, but a variety of pitches were investigated in varying conditions of manipulation, such as small and large interval changes. An effort was made to correlate the sound with the reed movement by means of physical evaluation and harmonic wave analysis.

Experimental Procedure

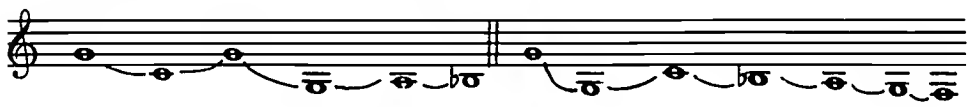
A mechanical apparatus was assembled to manipulate the clarinet. This design consisted of a glass enclosure, artificial embouchure, and an air supply system. This apparatus allowed for a controlled air pressure of 9-11 oz. and a constant controlled embouchure pressure and placement.

Photography. The clarinet reed's movement was photographed utilizing a variety of techniques:

Set I — Shadow Photography at 2,800 to 7,000 frames per second of the mouthpiece and reed (side view) sounding tones in a steady state.

Set II — Direct Photography at 5,000 per second.

Set III — Streak Photography at 300 frames per second (time resolution compared to 11,000 frames per second) of the mouthpiece and reed tip in a continuous recording movement along a slit versus time. The streak content was of (1) the reed and mouthpiece without sound, (2) the reed and mouthpiece without sound, but with playing embouchure pressure, and (3) the reed's behavior while playing the following notes.



Set IV — Direct and Oscilloscope trace photography combined at 2000 frames per second of the mouthpiece and reed (side view) sounding (a) low G, (b) a slurred scale from low F up to throat B flat, and (c) a slur from low E to low G up an octave to open G.

Results

The reed vibrates at the same frequency as the pitch of the tone (Sets I and II), creating a gap between the reed and mouthpiece from the tip back to the embouchure. The opening of the reed does not cause a flex beyond a straight line.

The embouchure pressure required (Set III) reduced the mouthpiece reed gap 43% from its non-pressure measurement. In a steady tone, the tip of the reed's excursion is further reduced (a Bernoulli effect is created) which is constantly pulling the reed toward the mouthpiece lay. The mouthpiece-reed gap closes completely about 40% of a cycle — never more than 45%. The wave form of the reed-tip's movement tends to be an asymmetrically square wave, but not a pure square wave due to the opening and closing time. When the reed is open it is not in a static state. During a slur between two tones the wave form changes to a sinusoidal shape, often with a high frequency vibration superimposed upon the fundamental. The dampened reed's natural frequency was between 3,300 to 3,600 cycles per second. The fastest speed of the reed's movement occurs just before closing resulting in a small rebound vibration. The reed reacted to a change in the tube length in .003 of a second, but it takes .057 of a second for a second tone to become stable in an octave slur and .010 of a second for a whole step slur. One harmonic analysis of the reed reveals that a normal vibration had about nine significant harmonics. The odd harmonic a twelfth above the fundamental had the greatest amplitude other than the fundamental. The sinusoidal wave forms that occur between stable pitches usually have one to three harmonics with the even harmonics an octave above the fundamental the strongest harmonics.

The harmonic content (Set IV) of the tone sound waves analyzed was below 4000 cycles per second and much more complex than the reed's harmonic content. Low tones had more harmonics than high tones. The general pitch of the second slurred note is established before its harmonic content becomes stable.

Order No. 71-03689

ABSTRACT

A STUDY OF INTERVIEWING PRACTICES AND TECHNIQUES UTILIZED IN THE SCREENING OF PROSPECTIVE MUSIC PERSONNEL IN DEPARTMENTS OF MUSIC IN INSTITUTIONS OF HIGHER EDUCATION

Joseph M. Hegstad, Doctor of Musical Arts
University of Missouri-Kansas City, September 1, 1970

Order No. not yet available

This study was undertaken as an investigation of current interviewing practices utilized in the screening of candidates for music positions in college and university departments of music, as well as relating principles of interviewing techniques currently being employed in the fields of personnel management and personnel psychology to the employment practices of the college or university music department.

A questionnaire survey was taken of selected music department chairmen in universities and colleges across the United States. This survey together with the research of interview literature available in the fields of personnel management and personnel psychology, provided the writer with a duality of information from which to construct guidelines and recommendations for the interviewing of music candidates.

The research of literature in personnel management and personnel psychology revealed several ideas which tended to isolate major factors on which, to a large degree, the success of the interview depended:

1. Personal bias on the part of the interviewer should be eliminated, as much as possible, from the interview process.
2. The interviewer should utilize a consistency of approach with regard to each different candidate.
3. Interview material cannot be consistently dealt with in the interview without some type of structured or patterned approach.
4. The form of the question asked by the interviewer can significantly affect the interviewee's answer.
5. The interviewer's overt attitude toward the interviewee's responses can significantly affect the quantity and quality of information obtained during the interview.

It was found, in the data procured from the questionnaire survey of the college and university music department chairmen, that the

personal interview, as it is conducted by the chairmen, appeared to have unique strengths which seemingly set it apart from the interviews conducted in business and industry.

1. The extensive utilization of multiple interviewing techniques in the selection of music personnel — at least 2 or more individuals designated as interviewers met the music candidate for the purposes of assessment and appraisal.
2. Panel interviewing, while not widely employed among music department chairmen, nevertheless sustained greater usage in the field of music than was evidenced in business and industry.
3. Music department chairmen, if they so choose, have the additional perspective of musical performance from which to evaluate the candidate's abilities.

Weaknesses which the writer felt impaired the efficiency of interviewing as conducted by the music department chairmen were found to be the need for:

1. more structured or patterned interviewing techniques.
2. familiarity with judgment errors, such as false stereotyping and bias.
3. increased knowledge concerning non-directive interviewing techniques.

By combining the extensive research source in business, industry, and psychology with the information procured from the survey of music department chairmen, this study presents guidelines and recommendations which may help point the direction toward more effective techniques in interviewing music candidates.

ABSTRACT

A STUDY OF REHEARSAL TECHNIQUES FOR SYMPHONIC BAND

William Nolley Vereen, Jr., D.M.A.
University of Missouri — Kansas City, February 28, 1968

On the basis of a survey of the literature conducted by the author, it was concluded that rehearsal techniques for symphonic bands were not codified in one specific source. A basic list of two-hundred-seventy-five rehearsal techniques was discovered from utilizing this survey and interviewing band directors, music teachers, and college professors.

A questionnaire, containing twenty-two multi-part questions found to be most pertinent for good rehearsal techniques of symphonic bands and designed to reflect the relative importance of each item for rehearsal techniques was evolved and mailed to one hundred seventy-five experienced and reputable band directors throughout the United States. From the eighty-two percent return of the Questionnaire, grade-level categories of the respondees were formulated, i.e., Elementary, directors who were concerned with teaching intermediate and advanced students; and College, directors who were responsible for teaching college students. A statistical analysis was made for each item according to grade-level category including an All-Level category.

Although each question was believed to be an important factor for rehearsal technique of symphonic bands by the respondees, there was some disagreement among grade-level categories as to the relative importance of some items. An In-depth Study of the results of the Questionnaire was made in order to define why differences of opinion existed. The In-depth Study was mailed to twenty select band directors throughout the United States; and, while there was only a fifty-two percent return, each grade-level was equally represented by the respondees. Each recipient was asked to submit reasons why he thought differences of opinion existed. A comparison of the In-depth Study and Questionnaire results was made in order to clarify the relative importance of each technique according to grade-level category.

The results of the research (1) collate and codify items believed to be most important to rehearsal techniques of symphonic bands, (2) furnish statistical analysis of each item by grade-level category, (3) isolate possible curricula content for educational method courses utilized in the teaching of future band directors, and (4) contain neuristic value for future research relative to specific items concerned with rehearsal techniques of symphonic bands.
Order No. 68-15222

ABSTRACT

A STUDY OF THE APPLICATION OF CREATIVITY IN THE TEACHING OF SECONDARY SCHOOL MUSIC

Elwood H. Brown, D.M.A., 1968

The study is divided into two major sections. The first section, in general, is concerned with the general nature of creativity as it

is known in the field of education today. Background is presented concerning thinking in the area of creativity today with some reference made to those personalities involved most prominently with the creative process in the theory and methodology of the current educative processes.

In defining creativity, an attempt is made to clarify the term in terms of music education and education in general to include the distinguishing of creativity in modern educational thinking as a process which is centered in the concept of problem-solving. As an elaboration is attempted of the implications of the process, it is related to basic concepts of music learning. Methodology is implied which can be implemented in the teaching of secondary school music from the standpoint of meaningful experiences and truly *music learning*.

As a part of the background for exploration of the general nature of creativity, an overview is presented of the philosophical backgrounds and implications for creativity as expressed by those philosophers and philosophies which most nearly approximate the theories and methodology of creativity as an educational process. An emphasis is placed upon the thinking of the pragmatic school which seems to be very much in accord with the principles and ideals of the creative process.

An overview of the psychological principles involved in creativity and the practice of creativity as a method or process is presented along with pertinent theories and principles of learning creativity.

The second section of the study is concerned with relating the general presentation of creativity to music education. An attempt is made to indicate how creative methodology can be applied to the teaching of secondary school music. While the material presented relates somewhat to all areas of secondary school music, the writing is slanted toward the vocal-choral area with which the writer is most familiar. An attempt is made to relate principles of a creative philosophy to principles of music education philosophy; principles of a creative psychology to principles of music and music education psychology. Methods, procedures, and principles of creativity are presented which have significance for music education relating how these methods, procedures, and principles may be applied in a general sense to the teaching of and performing of secondary school music for improved *music learning* and more meaningful experiences.

The thesis implied is that music directors are not providing for a meaningful experience with music at the secondary level particularly in the performance area. This has been attempted to be corroborated through a discussion of findings of a questionnaire sent to various high schools throughout the United States to ascertain the expected status of current practices in secondary school music teaching. The questionnaire was also designed to ascertain whether music educators in high schools and colleges throughout the country were aware of the creative process and creative methodology as an avenue of approach for more meaningful teaching of music in the school. Through example and through alluding to implications, it is shown how the creative process can be implemented as a worthy teaching procedure for enriching the musical learnings in the secondary school music curriculum.

Order No. 68-15219

ABSTRACT

MUSIC DEPARTMENTS OF COLLEGES OR UNIVERSITIES AND PUBLIC SCHOOLS — INTERRELATIONSHIPS

Jesse Laurence Peterson
University of Missouri-Kansas City

There is a basic interrelationship between the college or university music department and those of the area public schools. This relationship may exist at many levels, ranging from complete harmony to open hostility. Most college and public school music departments desire a good interrelationship, but frequently many problems exist between the two institutions.

The purpose of this study is three-fold: (1) to examine the methods employed by various colleges in establishing better interrelationships between themselves and their area public schools; (2) to design a program to develop better interrelationships between the Conservatory of Music of the University of Missouri at Kansas City and the public school music departments in the greater Kansas City area; (3) and to inaugurate a pilot study at the Conservatory of Music of the University of Missouri at Kansas City to correspond with the designed study.

The writer visited ten college campuses in California, Michigan, Missouri, and Kansas and interviewed the music administrator in each institution. The purpose of these interviews was to learn of the nature of the interrelationship existing between the music department of the college and its area public schools.

Following the interviews, a questionnaire was designed to further examine interrelationships between the college and high school music departments. This instrument was sent to one hundred music administrators.

The interrelationship of the Conservatory of Music at the University of Missouri at Kansas City and the public school music departments in the greater Kansas City area was examined in detail. The writer interviewed many Conservatory graduates and area public school personnel. The information yielded by the questionnaire and the interviews with college administrators was compared to the practice of the Conservatory.

With the information gathered, the writer designed a program to maintain and improve the relationship of the Conservatory to the public school music departments. This program included communication with both the public school teacher and student. There were personal visits of the college faculty to public schools and of the public school faculty to the college campus. Communication was emphasized at all levels.

Another aspect of the pilot program was a series of clinics. These included a percussion festival, a conducting clinic involving both students and teachers, and a choral clinic. A total of more than 1,150 persons from the public schools attended these sessions.

There was an evaluation attempted at the close of the first year of the pilot study. This revealed a significant change in the attitude of both the area public school directors and the Conservatory faculty. This program would appear to have a real potential for developing a meaningful interrelationship between the Conservatory of Music of the University of Missouri at Kansas City and the public school music departments in the greater Kansas City area.
Order No. 68-15221

ABSTRACT

SERIAL COMPOSITIONS FOR BAND

by Robert Lowell Casey, Ed.D.
Washington University, 1971

The purpose of this study is to describe, through detailed analysis, those serial techniques which have been used in selected compositions for the wind band and to compare the procedures found in these works with developments in serial composition in general.

It is shown that some forty years passed from the time of Arnold Schoenberg's first completed efforts in serial composition until the appearance of the first published works in this idiom for the wind band. It is recognized that the development of serial techniques has been one of the most significant developments in twentieth century composition and that this fact, together with the fact that the wind band exists in the United States primarily in the miliu of the educational system, created a need for works written in the serial idiom to be made available for performance and study. It is also recognized that current trends in music education emphasize the need for the development of analytical and cognitive skills, in addition to those skills concerned directly with performance, and that a sufficiently large body of band works in the serial idiom has just recently become available, making such a study now possible. In light of the current theory and practice in music education and the unfamiliarity with the idiom on the part of many band directors, the need for such a study becomes readily apparent.

A historical synopsis of some of the more salient points in the development of serial techniques from the early works in this style by Arnold Schoenberg (1874-1951) through both, the American and European movements toward "total organization" is included.

Seven works were selected for analysis as follows: William Latham's "Dodecaphonic Set," Frank Erickson's "Earth Song," Hale Smith's "Somersault," Herbert Bielawa's "Spectrum," Gunther Schuller's "Meditation," Karel Husa's "Music for Prague, 1968," and George Rochberg's "Apocalyptica." The latter piece is included in the study to show the serial influence on the work of a composer who formerly was considered a member of the "twelve-tone school" and who has since avowed rejection of the system.

It is shown that most of the pieces analyzed employ techniques which were formulated early in the development of the system, making little use of technical advances in the system beyond the so-called "classical" procedures. Exceptions to the foregoing, however, appear in Gunther Schuller's "Meditation," where the succession of transposition levels is controlled by the intervallic succession of one form of the pitch set, and in the third movement of Karel Husa's "Music for Prague, 1968," in which serial techniques are employed to control non-pitch parameters.

This study is intended to provide the requisite information and insight into serial compositional techniques for the band director to perform and teach successfully compositions written in this idiom.
Order number not yet available.